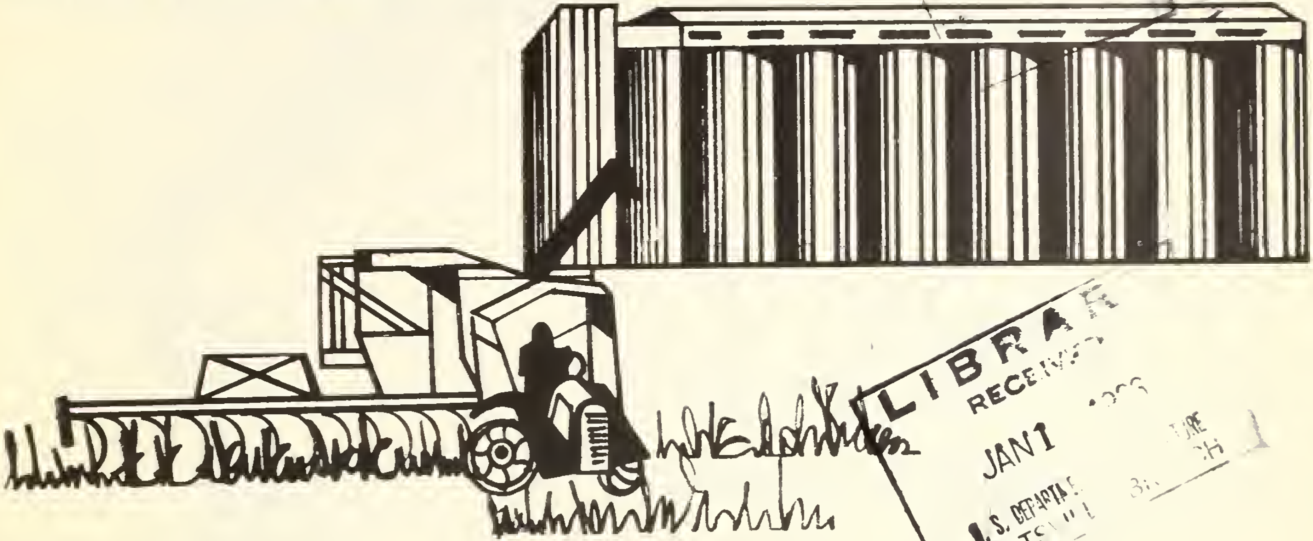
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

a281.9
F76Fm
Fas-M 171

FAS-M 171

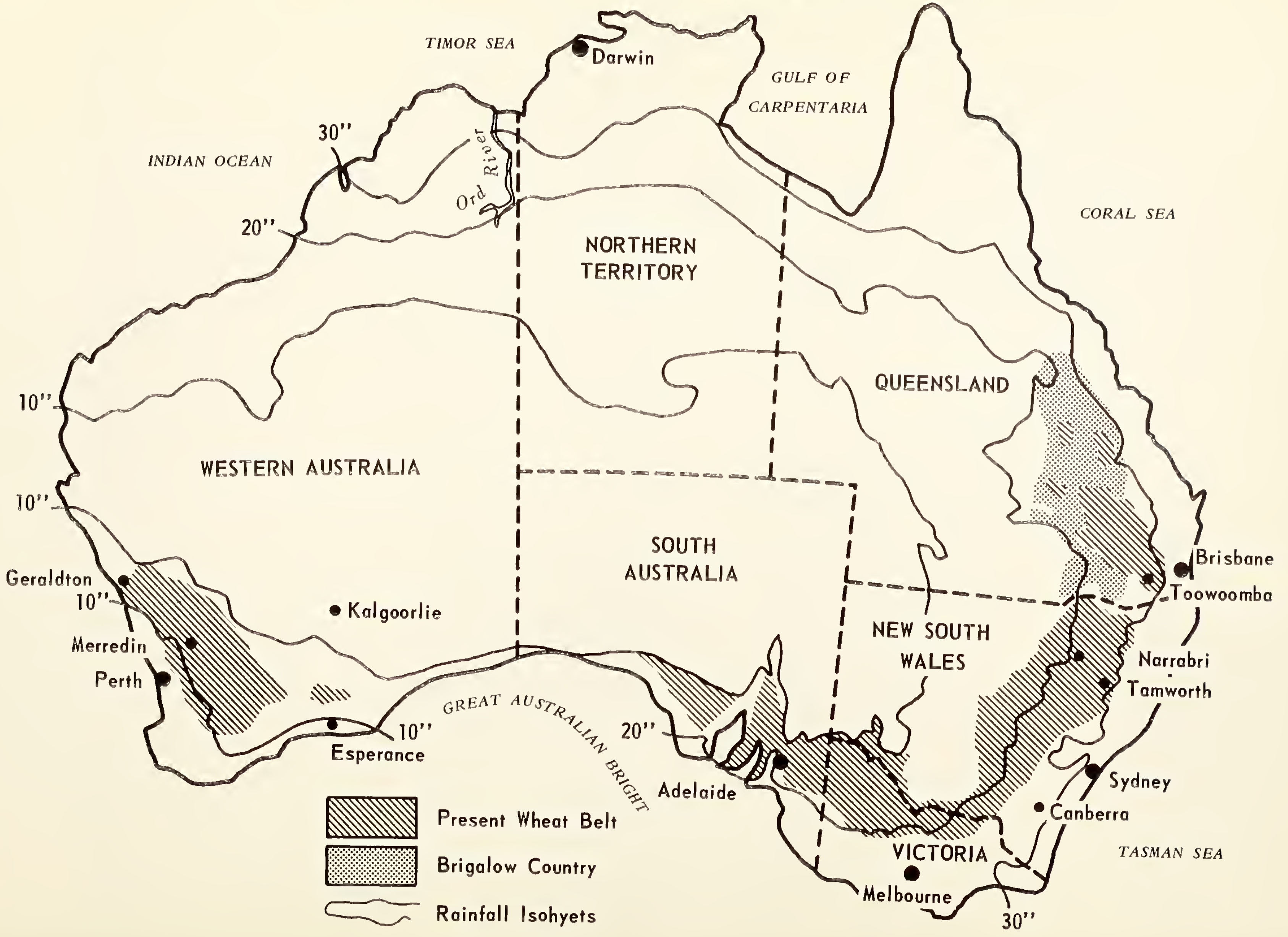
THE AUSTRALIAN WHEAT MARKETING SYSTEM



LIBRAR
RECE
JAN 1
U. S. DEPARTM
BELTS

FOREIGN AGRICULTURAL SERVICE · U.S. DEPARTMENT OF AGRICULTURE · DECEMBER 1965

AUSTRALIA:
WHEAT PRODUCING AREAS AND RAINFALL PATTERN



FOREWORD

Australia is one of the world's major wheat producing and exporting countries, along with the United States, Canada, Argentina, and France.

It is for this reason that the Foreign Agricultural Service, in cooperation with organizations representing U.S. wheat producers, undertook this study of the Australian wheat industry, with special reference to its marketing system. Participating were representatives of Great Plains Wheat, Inc., and Western Wheat Associates, Inc. The "Wheat Team" that made the study was composed of Dr. William E. Colwell, past-president of the Nebraska Wheat Growers Association; Orville A. Vogel, agronomist with USDA's Agricultural Research Service, stationed at Washington State University; Ralph McEwen, administrator of the Oregon State Wheat Commission; and C. V. Jean, FAS Grain and Feed Division.

The present study is fourth in a series on the wheat marketing systems of U.S. competitors in world markets. The three earlier studies were published as FAS-M-95 "Argentine Wheat Marketing Practices and Facilities" (September 1960); FAS-M-99 "Grading and Exporting Wheat in the Union of Soviet Socialist Republics" (February 1961); and FAS-M-140 "Canadian Wheat Marketing" (July 1962).

The authors of the present study wish to acknowledge with gratitude the generous assistance given them in making this study, by both Australian and U.S. experts.

Representatives of the Australian Wheat Board, the officials of the Department of Primary Industries and of State departments of agriculture, leaders of producer organizations, researchers, and the Australian "man on the land" were all most cooperative and made them welcome and at home.

The authors also express sincere appreciation to William L. Rodman, U.S. Agricultural Attaché, American Embassy, Canberra, Australia, who has made such excellent arrangements and accompanied them throughout their travels. His Australian counterpart, F. M. Collins, Agricultural Attaché in Washington, has been most helpful in providing background material and explanations on the Australian system.

Raymond E. Vickery

Raymond E. Vickery, Director
Grain and Feed Division

CONTENTS

The farming system:

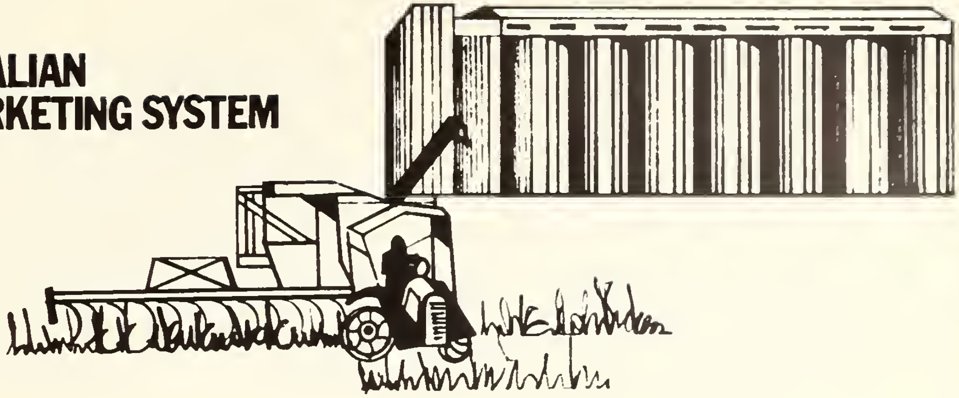
- Climate, rainfall, and soils ---- 2
- Farm organization and size ---- 2
- Legume pastures ---- 3
- Expansion ---- 3
- Technological advances ---- 5

The marketing system:

- Plan mechanism ---- 6
  - Economic survey ---- 6
  - Cost of production ---- 7
  - Yield divisor ---- 7
  - Guaranteed price ---- 7
- Plan operation ---- 9
  - Economic survey ---- 9
  - Stabilization Fund ---- 9
  - Cost of production ---- 12
  - Guaranteed price ---- 12
- Handling and storage ---- 14
- Wheat pools ---- 14
- Transportation ---- 15
- Export marketing ---- 16
- Wheat Board membership ---- 18
- Grades and standards ---- 18
- Research and quality ---- 21
  - Improved varieties ---- 21
  - Weeds and insects ---- 23

The production outlook ---- 23

THE AUSTRALIAN WHEAT MARKETING SYSTEM



By C. V. JEAN
Grain and Feed Division

Australian wheat acreage in the mid-1960's stands at 17.7 million acres—up 42 percent from the 1950–59 average. Yields are up 15 percent and total production has more than doubled.

Exports likewise have increased. In the 1950's, exports of wheat and flour averaged 2.6 million metric tons a year. In the 4-year period 1960–64 they were running at about 6 million tons—a 127 percent increase. Meanwhile, total world wheat and flour trade has increased 55 percent. Australia's larger exports can be attributed in part to trade with Communist bloc countries, which began in 1960, but this trade, which averaged 2.4 million ton during the 4 years, accounted for 70 percent of the increased exports. In these years, exports to non-bloc destinations were running a million tons higher than in the 1950's.

Obviously, production will not continue to increase at these rates; there is reason to believe, however, that the trend will continue upward. Opportunities exist through development of new lands, through intensification of wheat-pasture rotations on existing cropland, and through increased yields from new varieties.

Preliminary estimates place the 1965 crop as the fourth largest on record—exceeded only by the three preceding crops, in spite of severe drought in New South Wales and Queensland. Reduced acreage in the drought areas has been partly offset by increases in other states.

Paralleling this production achievement are the efforts of the Australian wheat grower to devise a unified wheat production and marketing system which, developing through a period of decades, now permeates the industry from plant breeding to export sales. The system is well-coordinated, monopolistic, government-sanctioned and assisted, and producer-oriented and directed.

It has not always been this way, however. The system evolved from many years of reverses for the Australian farmer. He has known prolonged drought. He has the handicap of being located great distances from many of the world's primary wheat and flour markets. World War II disrupted his wheat trade and brought him no advantages. Out of this background the Australian wheat grower emerged in the late 1940's with an objective of never again producing wheat for what he considered to be less than his cost of production.

This brought forth a system which assures growers of certain returns from growing wheat. It also provides for a highly organized marketing system in which the Australian Wheat Board is the exclusive marketing agency. In order to compensate for its distances from most world markets the practice of destination pricing has been developed. The Wheat Board is the largest ship charterer in Australia. Australia engages in long-term sales contracts, some of which are bilateral trade agreements, extension of credit, and other sales practices which have been effective in the export marketing of Australian wheat and flour.

In the future, if Australia continues to increase production—as is likely—the increased output will move into international trade as the nation's annual domestic use is fairly static at around 70 million bushels. If this should occur, the effective and well-organized marketing system will be called on to seek out new markets and expand sales in existing markets as it has in the past, with a high degree of flexibility.

THE FARMING SYSTEM

Climate, rainfall, and soils

The Australian continent is almost the same size as the continental United States. While nearly 40 percent of Australia lies within the tropics, the remainder south of the tropical zone varies from parched desert in the interior to temperate pastoral areas along the southern coast.

The continent is one of the most ancient land forms geologically and there is predominant evidence of climax erosion. There are no extensive high mountain ranges in the nation and, consequently, no large river systems. A ridge of highlands along the eastern seacoast, known as the Great Dividing Range, varies in width from 50 to 100 miles and lies about 100 miles inland from the coast. The highest points are from 4,500 to 7,300 feet elevation. The eastern side of these highlands is marked by a system of short, turbulent rivers, particularly in the rainy season, as the range falls away rapidly to the Pacific Ocean seacoast. The western side of this range slopes away gradually toward the center of the continent forming an inland plains area. Further west, the elevation again increases to form the Great Plateau of the west, a barren desert which covers about 20 percent of the nation.

Australia's wheat producing areas are located near the coastlines in the southern periphery of the continent. This area lies between 28°S. and 35°S. latitude. Comparable points in the Northern Hemisphere would be a belt of 100 miles to 200 miles wide in the United States, the center of which would parallel the latitude of San Diego, California and Fort Worth, Texas.

Most of the wheat belt in Australia lies within the 10-inch to 22-inch rainfall zone. However, the eastern end of the wheat belt in New South Wales and Queensland lies in the summer rainfall area, with an average of 20 inches to 30 inches annually.

All of the wheat belt lies in a climatic zone where winters, while not entirely frost-free, can be considered very mild. In fact, compared with the wheat belts of North America, the Australian wheat belt experiences little or no winter.

Five groups of soils are used for wheat growing in Australia:

(1) Coastal leached acid soils in the high-rainfall areas.

(2) Red-brown earths of New South Wales, South Australia, and Victoria.

(3) Mallee soils in the drier regions adjacent to the red-brown areas.

(4) Grey-brown, heavy soils in the Wimmera of Victoria.

(5) The fertile, deep black soils of northern New South Wales and Southern Queensland.

These soils, with a few exceptions, are rather poor in comparison with soils in the United States. All of them are badly deficient in phosphate, except the black soils. In Western Australia, intermittent applications of trace elements such as copper, zinc, cobalt, and magnesium in some locations also give good results.

Farm organization and size

Almost without exception, wheat is raised in conjunction with other farm products throughout Australia. There are no "wheat farmers" in Australia, as the term is used in the United States. Every farm producing wheat also has sizable sheep flocks and possibly some cattle. Land not producing wheat is kept in some type of legume pasture, although small amounts of barley and oats are common crops.

In Australia, the farms vary considerably in size. However, they are in general larger than U.S. farms, with reasons including lower productivity per acre, production of wool and wheat on the same farm; Australia's lower capital investment for land; and the greater efficiency and economy attendant on use of larger units.

In New South Wales, farms range in size mainly from 1,200 to 2,500 acres, except in the northwest where sizes are around 5,000 to 7,000 acres. In Victoria, most farms are 1,500 to 2,000 acres in size. South Australian farms vary according to rainfall—from 700 to 800 acres in the 20-inch rainfall belt to over 2,000 acres in the 10-inch rainfall zone. In Western Australia, the average size of farm is 2,000 acres in the more fertile high-rainfall areas and from 15,000 to 20,000 acres in the areas with 12 inches and less of rainfall. One operation to the east of Geraldton, reported to be the largest in Australia, contains nearly 87,000 acres with over 18,000 acres of it in wheat production. Sheep numbering 56,000 graze the remainder of this acreage. New South Wales and Western Australia are the only states having several units of 35,000 acres and larger.

With prevailing conditions, year-round grazing of stock is the normal practice. Occasionally, there are periods of drought when it is necessary to provide supplemental feed for sheep and cattle. Farms ranging from 1,200 to 5,000 acres require the absolute minimum of buildings and equipment by U.S. standards, and nowhere is it necessary to house livestock.

A typical farmstead includes the dwelling, a farm shop-machinery shed, a small barn for storing for emergencies, and possibly a sheep-shearing shed.

Legume pastures

The use of legume pastures, referred to in Australia as the ley-farming system, is prevalent; these pastures provide the main source of feed for livestock, particularly sheep. Not only does this system afford excellent pasture; in most of Australia, it is also the sole source of nitrogen for subsequent grain crops. Legumes—such as lucerne (alfalfa), subterranean and Geraldton clover—and the medics (trefoils)—such as Barrel and Cyprus varieties—have aided materially in increasing the carrying capacity for livestock, grain yields, and protein levels of grain. The maximum use of each legume is somewhat specific for soil type and for the amount and distribution of rainfall; the net effect amounts to an agricultural revolution. In addition, grain stubble fields provide excellent pasture for sheep after harvest. Following harvest, a wheat field—or paddock, as it is called in Australia—will provide 4 months of pasturage for sheep. In addition to the straw stubble, the sheep graze on the weeds and weedy grasses that grow in the grain stubble. The residual value of this wheat crop, as feed for sheep, is of economic significance. This is because of climatic conditions and the fact that the wheat grown is a spring wheat which requires a shorter period between planting and harvest than that of the winter-wheat-growing regions of North America, including that of the United States.

Expansion

Wheat acreage in 1964 was 17.7 million acres, up 58 percent from the 10-year average of 1950–59, and 7.3 percent from the 1963 acreage. The 1964 acreage was a postwar record; however, the alltime record of 18.2 million acres was established in 1931. Most of the decade's acreage increase has occurred in the last 5 years. Likewise, total production in 1964–65 was 370 million bushels, compared with the 10-year average for 1950–59 of 174.7 million bushels. The 1962, 1963, and 1964 crops, all of which were over the 300-million-bushel mark, are the largest on record.

As with other major producing countries, yields per acre have increased. In the 1959–60 period, average yields were 16.9 bushels per acre, compared with the yields of the preceding decade, averaging 13.7 bushels. Yields in 1963 and 1964 were 20.2 and 20.9 bushels per acre. Usually, such increases are associated with advances in technology. While this is basically true of Australia, the nature of the technological advancements that have brought about both increased acreage and increased yields offers interesting contrasts to the experience in North America.

In the past decade, acreage has increased 170 percent in *Western Australia*, which still possesses the greatest potential for wheat acreage expansion in the nation. One of the principal reasons for this is the government policy of encouraging the development of "Crown" land, which is sold at prices ranging from 65 cents to $2.00 per acre. Approximately 750,000 acres of these new lands are brought into production each year with substantial amounts going into wheat production. Other contributing factors are the development of adapted legumes, mechanization, and improved fertilizer use.

In this state, yields per acre are the lowest in all Australia; however, costs of production are also lowest.

Conceivably, Western Australia has a potential wheat acreage of 10 million acres, although some of the amount included, in areas of 9- to 10-inch rainfall, would be somewhat risky.

Increased use of land in *Southern Australia* has taken place through more intensive plantings in the established wheat producing areas, as well as a gradual movement west of Adelaide. This production expansion is moving into the areas of lighter rainfall. Maximum acreage potential would appear to be 4 million acres, increases up to a half-million acres per year may be achieved, if conditions for expansion remain favorable.

Victoria is the smallest of the wheat producing states, and perhaps the most intensive and diversified farming is to be found there. Acreage has expanded considerably in the past decade, and appears to have reached its maximum at the present level of 3 million acres. However, continued improvements in clover-ley pastures will undoubtedly further increase yields.

Much of the wheat area in *New South Wales* is in the summer rainfall area and the transition to use of modern wheat combines and bulk handling has enabled farmers to harvest and handle larger acreages under these conditions. Acreage expansion has moved westward into the lighter rainfall areas. Further expansion would involve the risks of low and unreliable rainfall. Some new lands in the northern part of the state are being brought into production. The clover-ley pastures are contributing to increased yields and in this respect the full potential has not yet been realized in New South Wales. Total production will probably increase more sharply than total acreage.

Queensland, with slightly less than a million acres of wheat, has the smallest acreage of any of the wheat-producing states. Long-range potential is related to the rate of development in the Brigalow Country, much of which is Crown land. This land has more dense brush and tree growth than the new lands in Western Australia and is therefore more expensive to clear. It is more

AUSTRALIAN WHEAT YIELDS PER ACRE AND YIELD DIVISOR

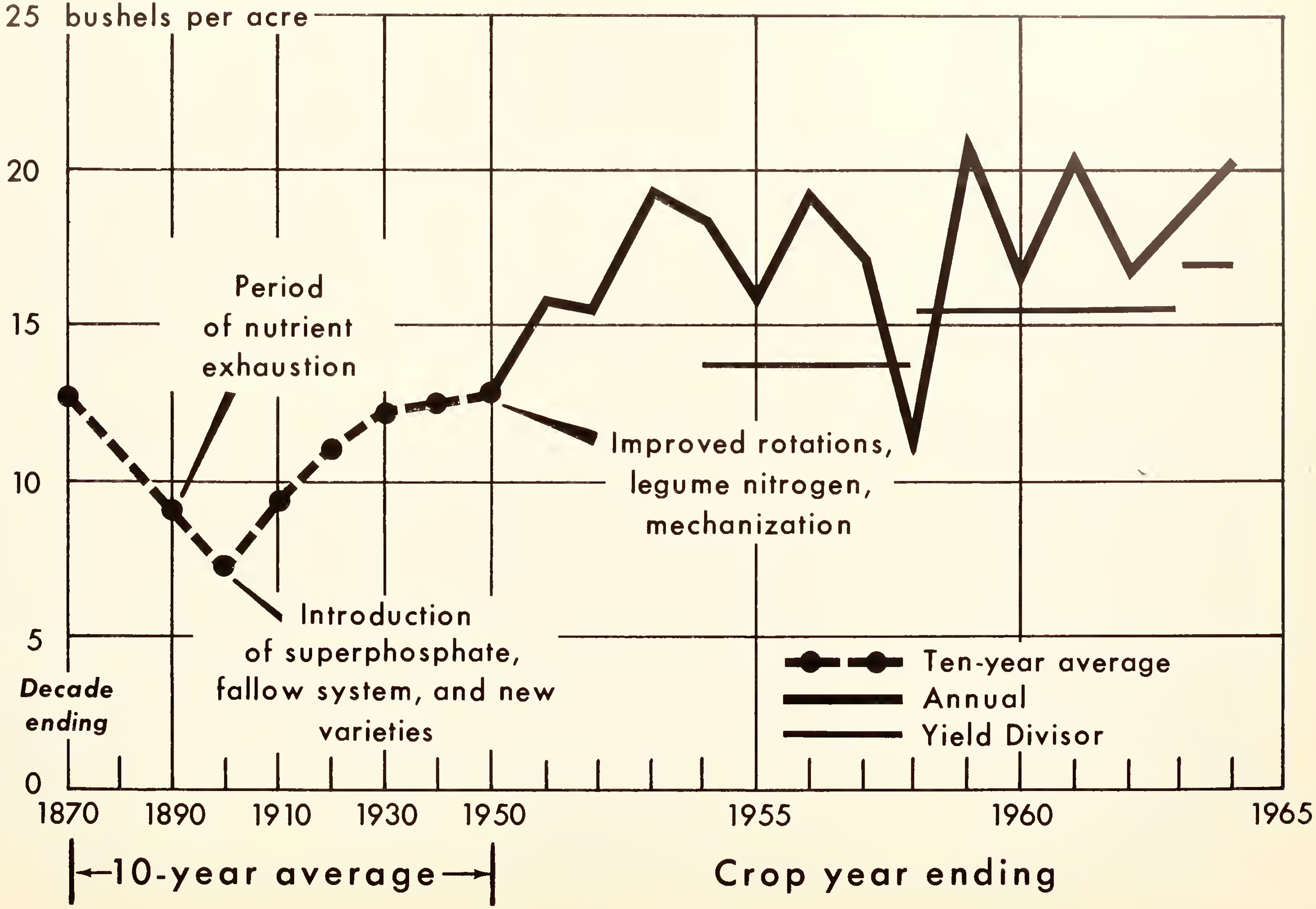


Table 1.—AUSTRALIA: Wheat acreage, yield, and production, by state, average 1950–51 to 1959–60, and crop years 1960–61 to 1964–65

Item	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania and Australian Capital Territory	Total
Acreage in 1,000 acres							
Average:							
1955–59	2,913	2,182	580	1,556	3,077	5	10,314
Annual:							
1960–61	4,076	2,672	693	1,969	4,021	7	13,439
1961–62	4,498	2,849	750	2,229	4,380	16	14,723
1962–63	5,008	3,125	919	2,595	4,804	18	16,469
1963–64	4,964	3,109	938	2,802	4,640	22	16,475
1964–65[1]	5,800	3,171	970	2,742	5,000	24	17,707
Yield in bu. per acre							
Average:							
1950–59	16.1	20.3	20.0	17.6	14.2	23.3	16.9
Annual:							
1960–61	20.8	25.3	15.9	23.6	15.9	21.4	20.4
1961–62	17.4	20.0	16.0	15.2	15.0	22.2	16.8
1962–63	21.8	21.7	20.3	14.8	15.1	27.3	18.6
1963–64	25.1	25.3	23.7	19.1	11.6	25.0	20.2
1964–65[1]	26.3	24.6	23.7	19.3	12.6	25.0	20.9
Production in 1,000 bu.							
Average:							
1950–59	47,907	43,974	11,896	27,323	43,416	148	174,684
Annual:							
1960–61	84,657	67,587	10,999	46,395	63,900	148	273,716
1961–62	78,350	56,879	12,018	33,854	65,700	345	247,178
1962–63	109,002	67,899	18,683	38,339	72,500	419	306,912
1963–64	122,472	76,302	22,275	53,971	52,340	600	327,960
1964–65[1]	152,400	78,000	23,000	53,000	63,000	600	370,000

---

[1] Preliminary.

fertile, however, and lies in a higher rainfall area. While development of these lands will be primarily for cattle raising and other agricultural purposes, some of the land will produce wheat in rotations. In the long run, there is reason to assume that the long-range maximum acreage in Queensland that could grow wheat may not as yet have been reached. As is the case with New South Wales, yields per acre would exceed the national average and production of considerable high protein wheat could result from expansion.

Technological advances

The recent past is characterized by significant technological developments which are altering the course of Australia's wheat industry. These are:

(1) Widespread use of superphosphates: The soils of Australia, with some exceptions, are inherently low in phosphate, and superphosphate is widely applied. It is generally acknowledged that in most areas no wheat could be grown without superphosphate. In 1963, the government announced a subsidy to farmers of $6.70 per ton of superphosphate, about 30 percent of the total cost, which will further encourage its use. A normal application is 100 pounds per acre, which is applied each time the land is cropped.

(2) Introduction and development of specially adapted clovers: Since the wheat-sheep farming system is so prevalent, the introduction of adapted clovers to the clover-ley rotation system has had a profound impact on Australia's potential for expanding wheat production. Subterranean clover, barrel medic and more recently, Cyprus medic and Geraldton medic in the west, are prominent in the pasture system. In some cases, use of this leguminous source of nitrogen has increased wheat protein levels 1 to 2 percent. The clover-ley system figures prominently in the hope of meeting Australia's objective of increasing the average wheat protein level from 1 to 1.5 percent.

(3) Use of trace elements: Copper and zinc deficiencies are found quite commonly, and sometimes cobalt and manganese deficiencies as well. In most situations, a single application will last

for several years. Natural impurities in superphosphate applications also aid in meeting these deficiencies.

(4) Rabbit control: Less than a decade ago, rabbit populations of 5,000 to 6,000 per section of land were not uncommon. This accounted for tremendous crop losses, reducing especially the carrying capacity of pastures. Today, the rabbit population has been reduced virtually to zero throughout the whole of Australia. This was accomplished through the propagation of Myxomatosis, a disease fatal to rabbits, which was carried by mosquitoes and other biting insects.

(5) Mechanization and bulk handling: In Australia, the wheat combine-harvester, referred to as a "stripper," has become the common method of harvesting wheat. Farmers are able to harvest acreage faster, quite an important advantage in the summer rainfall zones of New South Wales and Queensland. A parallel development has been the rather rapid shift from bagged to bulk handling of wheat. Farmers haul their wheat in trucks directly from the field to the country elevator in much the same manner as in the United States. In 1962–63, only 6 percent of the Australian crop was handled in bags, compared with 18 percent in 1958–59.

A threshold development likely to be significant in the future is the use of chemical nitrogen on wheat land. At present, the most commonly used form is Urea which costs, delivered to the farm, about 10¢ to 11¢ per pound of nitrogen. Other forms are being investigated.

THE MARKETING SYSTEM

From farm to final market, Australian wheat moves through a monopolistic system which, while grower-controlled, is nevertheless governmental in operation. The system includes guaranteed prices, franchised handlers, and a governmental sales agency, all totally void of domestic competition.

One of the key elements in this system is the Wheat Industry Stabilization Act of 1958, which provides the basis for determining the "cost of production" which, in turn, is the basis for the guaranteed price. (The mechanism for the guaranteed price is essentially governmental and was achieved through enactment of legislation by the Commonwealth as well as by the parliament of each wheat producing state.) This monopolistic marketing system results from the creation of the other key element, the Australian Wheat Board, which first became the sole sales agency for all Australian wheat by Act of 1947.

Plan mechanism

Since the 1948–49 season, Australian wheat growers have benefited from a series of price stabilization plans or schemes, which have undergone refinement and modification since they were initiated. The Wheat Stabilization Act of 1958, similar to legislation for earlier schemes, provides the basis for the current stabilization scheme.

Associated with each of the successive stabilization plans are three related features: (1) an economic survey of the wheat-growing industry; (2) a cost-of-production formula; and (3) the gazetted guaranteed price for each season. Each plan or scheme has prevailed for a 5-year period. Beginning with the 1963–64 crop, Australia entered the fourth postwar stabilization scheme.

Economic survey

This survey provides basic data on wheat-growing costs for use in negotiating the official cost-of-production for the next 5-year Wheat Stabilization Plan. At approximately 5-year intervals, i.e., conveniently with initiation of each 5-year scheme, the Commonwealth Bureau of Agricultural Economics conducts an economic survey of the wheat industry. The first one took place in 1947–48, followed by surveys in 1950 and 1957, and the most recent in 1962.

In the economic survey, detailed cost analyses are made of the operations of a sample of commercial wheat-growing farms.[1] A representative sample has

---

[1] The first-year Scheme was based on a survey conducted in 1947-48. In this initial undertaking, a committee was appointed to obtain information by questionnaires which were mailed to a random sample of wheat farmers. Only a moderate response was received, and the committee visited wheat producing areas where they interviewed farmers and others. This study lacked precise criteria and methods; out of this experience grew recommendations for direct field examinations and other procedures to make the study more precise. This study did not produce detailed cost information. No yield divisor was determined. The guaranteed price for the first year of operation, 1948-49, was "six and eight" (six shillings, eight pence—or 75¢ per bushel) and, according to one source, was a figure "pulled out of the air." In the next four years, the guaranteed price fluctuated upward to $1.34 per bushel. Presumably, these levels were determined largely by arbitration. The second 5-year scheme (1953-54/1957-58) was based on a 1950 study containing more precise criteria.

Table 2.—AUSTRALIAN WHEAT STABILIZATION SCHEMES: Data developed from economic surveys, with yield divisors, for first four schemes

Scheme	Period covered	Based on economic survey			Yield (bushels per acre)		
		When conducted	No. sample farms	Financial years covered	On sample farms	All Australia	Yield divisor
First	1948–49/1952–53	1947–48	(1)	1942–43/ 1946–47	(1)	13.7	(1)
Second	1953–54/1957–58	1950	241	1947–48/ 49–50	16.63	16.3	13.5
Third	1958–59/1962–63	1957–58	360	1954–55/ 1956–57	18.0	17.4	15.5
Fourth	1963–64/1968–69	1962	302	1959–60/ 1961–62	18.14	17.84	17.0

[1] This method not used in the first survey.

been selected and farm records covering three recent financial years have been analyzed. There are at present approximately 52,000 farms producing wheat in Australia, 35,000 of which grow 100 acres or more of wheat and account for 93 percent of total wheat production; in the most recent survey, a little over 300 of these gave a representative sample.

Cost of production

The official cost of production is established yearly by the Wheat Index Committee, using the basic data provided by the economic survey. Because the survey covers 5-year periods, and there are changes during these periods in the costs of various input items, it is necessary to adjust cost of production each year. These costs, as determined by the economic survey, are tabulated for the first year of a Scheme and given a weight of 100. Cost movements in the subsequent four years are adjusted according to cost index movements.

Yield divisor

In such an undertaking, it is necessary to have some factor for converting costs of the "average farm," into amounts per bushel. Thus, as part of each 5-year scheme, a figure called the "yield divisor" is selected, representing the equivalent of a national "yield-per-acre" figure, and used to convert "average farm" costs into costs-of-production per acre of wheat. In practice, the yield divisor has averaged about three bushels below actual yields per acre.

Guaranteed price

Because of changes in the movement of various cost items, a new price is announced annually for the year's crop. While this is commonly referred to as the guaranteed price, the correct term is the "Gazetted Cost of Production."

The guaranteed price applies only to home-consumption wheat plus a specified quantity going into export. The export quantity guaranteed was 100 million bushels for the 10 years, 1953–63. For the 1963–64 crop, the quantity was increased to 150 million bushels; this level prevails for the 1964–65 crop.

On November 30, 1964, the Minister of Primary Industries announced the guaranteed price for the 1964–65 crop, at 14 shillings and 7 pence ($1.633). This is up 2 pence (1.9¢) from last year, but below the levels of $1.70, $1.76, and $1.77 which prevailed for the 1960–61, 1961–62, and 1962–63 crop years, respectively.

Domestic prices are set annually and require legislation by the five wheat-producing states and the Commonwealth Parliament. In reality, the guaranteed price sets the domestic price. Usually, the domestic price is the same as the guaranteed price plus a fee of one or two pence (0.93¢–1.9¢) to cover costs of shipping wheat to Tasmania, a wheat-deficit state of Australia, less an adjustment for the lower export freight costs from Western Australia. For 1964–65, it is one pence above the guaranteed price.

Since there is no competition for the domestic market, the guaranteed price for domestic use is self-operative. Millers buy at the price set for domestic wheat. For premium (very soft or very hard) wheats, higher prices prevail.

The export market, on the other hand, subject to competition, is influenced by additional factors.

The Australian system does not directly guarantee income to the grower. The Wheat Stabilization Plan assures the grower instead, that to the extent the Wheat Board is able to sell his wheat, he will receive the "average cost of production" on a certain quantity of

Table 3.—AUSTRALIAN WHEAT: Official cost of production[1], 1953–54 to 1963–64

Item	Second Scheme					Third Scheme					Fourth Scheme
	1953–54	1954–55	1955–56	1956–57	1957–58	1958–59	1959–60	1960–61	1961–62	1962–63	1963–64
	Cents per bu.	*Cents per bu.*	*Cents per bu.*	*Cents per bu.*	*Cents per bu.*	*Cents per bu.*	*Cents per bu.*	*Cents per bu.*	*Cents per bu.*	*Cents per bu.*	*Cents per bu.*
Cash costs:											
Labor	30.20	30.20	30.79	32.12	32.86	26.42	27.03	28.06	29.05	28.93	20.23
Petroleum products	16.83	16.18	15.90	17.17	17.48	19.68	19.45	19.29	18.91	18.61	14.28
Fertilizer	14.04	11.73	11.70	12.00	12.72	14.22	13.11	13.06	13.12	13.15	12.29
Seed	8.35	8.64	8.57	8.81	9.29	7.86	8.10	8.26	8.52	8.86	9.02
Repairs	21.88	21.92	23.85	25.46	26.09	26.17	26.64	27.36	27.92	28.19	21.91
Cornsacks	3.15	1.98	2.01	2.01	2.18	4.74	4.45	5.79	6.37	5.90	2.66
Cartage (hauling)[2]	3.32	3.32	3.51	3.79	3.84	[3] 1.01	[3] 1.04	[3] 1.08	[3] 1.09	[3] 1.09	[3] 2.83
Taxes, local and state	3.32	3.57	3.89	4.21	4.51	5.95	6.12	6.61	7.32	7.80	7.07
Insurance	3.52	3.25	3.37	3.62	3.88	5.34	5.45	5.69	5.84	6.26	4.35
Rent	1.05	1.05	1.05	1.05	1.05	.71	.71	.71	.71	.71	.94
Contract work[4]	—	—	—	—	—	—	—	—	—	—	8.89
Chemicals[4]	—	—	—	—	—	—	—	—	—	—	4.28
Motor registration[4]	—	—	—	—	—	—	—	—	—	—	1.46
Miscellaneous	11.39	11.07	11.70	12.34	12.77	24.07	24.56	25.34	26.33	26.65	4.83
Total cash costs	117.05	112.91	116.34	112.58	126.67	136.17	136.66	141.25	145.18	146.15	115.04
Plus—											
Depreciation	19.35	20.72	22.11	23.61	25.25	42.17	44.58	46.76	49.00	50.81	41.97
Interest-farm capital	30.99	31.83	32.71	35.33	36.28	62.70	63.83	66.39	70.63	71.70	64.05
Working capital	—	—	—	—	—	2.94	2.95	3.05	3.14	3.16	3.16
Owner-operator allowance	39.33	39.33	39.33	40.40	41.45	42.62	44.24	44.24	45.52	45.52	44.04
Gross cost at siding	206.72	204.79	210.49	211.92	229.65	286.60	292.26	301.69	313.47	317.34	268.26
Minus—											
Sideline deduction	90.21	89.33	91.80	96.82	100.17	148.67	151.57	156.50	162.62	164.67	131.81
Net cost at siding	116.51	115.46	118.69	115.10	129.48	137.93	140.69	145.19	150.85	152.67	136.45
Plus—											
Rail freight and handling	24.11	25.52	27.48	27.99	29.23	24.47	25.10	24.85	25.51	24.86	24.86
Net cost f.o.r. ports	140.62	140.98	146.17	153.09	158.71	162.40	165.79	170.04	176.36	177.53	161.31

---

[1] As determined annually under various Wheat Industry Stabilization Acts. Costs shown under each of the second, third, and fourth schemes have been based on a cost formula combining the results of an industry survey with certain imputed elements which were subject to Government decision. A new survey is undertaken to establish the costs for the first year of each of the 5-year schemes. The main variations in the cost formula over the above schemes have been the changes in the average yield factor from 13.5 bushels per acre in the second scheme (1953–54 to 1957–58), to 15.5 bushels per acre in the third scheme (1958–59 to 1962–63), and 17.0 bushels per acre in the fourth scheme (1963–64 to 1967–68). Other important elements in the formula have also been changed over the period. Care should therefore be used in making comparisons between the schemes.
[2] Includes all cartage (hauling). [3] Covers wheat only. Other cartage included in "miscellaneous." [4] Until fourth scheme included under "miscellaneous."

Source: *The Wheat Situation*, BAE, Canberra, Australia, August 1964.

wheat. The Stabilization Fund provides the mechanism to fill the gap between the guaranteed price and the average return from domestic sales plus the 150 million bushels of guaranteed export sales. Thus, with the exception of domestic sales, markets must be found and sales made before the guaranteed price becomes effective on export wheat. The quantity of wheat covered by the plan (now 150 million bushels) is usually sold within the crop year. As wheat is marketed on a pool basis, the Wheat Board continues to market old crop wheat until the pool is completely sold. In recent years, it has taken as long as 24 to 30 months to finalize (completely sell) a pool. Regardless of how long it takes to market a pool, the guaranteed price for that pool prevails. (More details on this are included in the section dealing with wheat pools.) Currently, with increased exports to Mainland China, individual pools are being finalized in less time. The final payment on the 1962–63 crop was made in June 1964, 18 months after the initial payment.

Plan operation

Because of the complex interrelationships among the economic survey, the cost of production, and the guaranteed price, the report attempts here to follow through the working of the system, step by step, with implications for the growers' returns and government costs involved.

Economic survey

In such an economic study, it is always difficult to assign contributory benefits to other enterprises. This is particularly difficult with regard to wheat, as Australia has few "wheat farmers," as the United States uses the term. For instance, there is an integral relationship among sheep, the ley-clover pasture system, and wheat. The pasture rotation system provides feed for sheep and nitrogen for wheat. Wheat, in turn, provides about four months' stubble pasture for sheep, and the stubble is said to help clean up the wool. It is almost impossible to isolate these contributory benefits quantitatively, in calculating "cost of production" for wheat. Some observers believe the cost of production is "slanted" so that costs assigned to wheat may be as high as can be defended. Others believe that accurate assignment of costs to wheat is not possible on an industry-wide basis.

The contributory benefits to other enterprises are referred to as "sideline benefits" and deducted from the calculated gross costs of producing a bushel of wheat. This is an arbitrary figure, based on an assumed sideline profitability and sideline gross income.

Stabilization Fund

In order to finance the guaranteed price, a Stabilization Fund was established to which both growers and the Commonwealth Government contribute.

When the world price falls below the guaranteed price, the Stabilization Fund is called on to make up the difference on the guaranteed amount of wheat.

The Commonwealth Treasury pays into the Fund in years of "losses", the producers (through a tax) in years when world prices exceed guaranteed prices.

In the 5-year period, 1957–58 to 1962–63, because the Fund has been exhausted by low export prices or drained down by higher guaranteed prices, the Commonwealth Treasury has paid an average of $18.8 million per year into the Wheat Stabilization Fund. For the 1962–63 crop, marketed as Pool No. 26 (completed recently), the Commonwealth Treasury provided $25.3 million—or about 25 cents per bushel on the 100 million bushels of guaranteed exports.

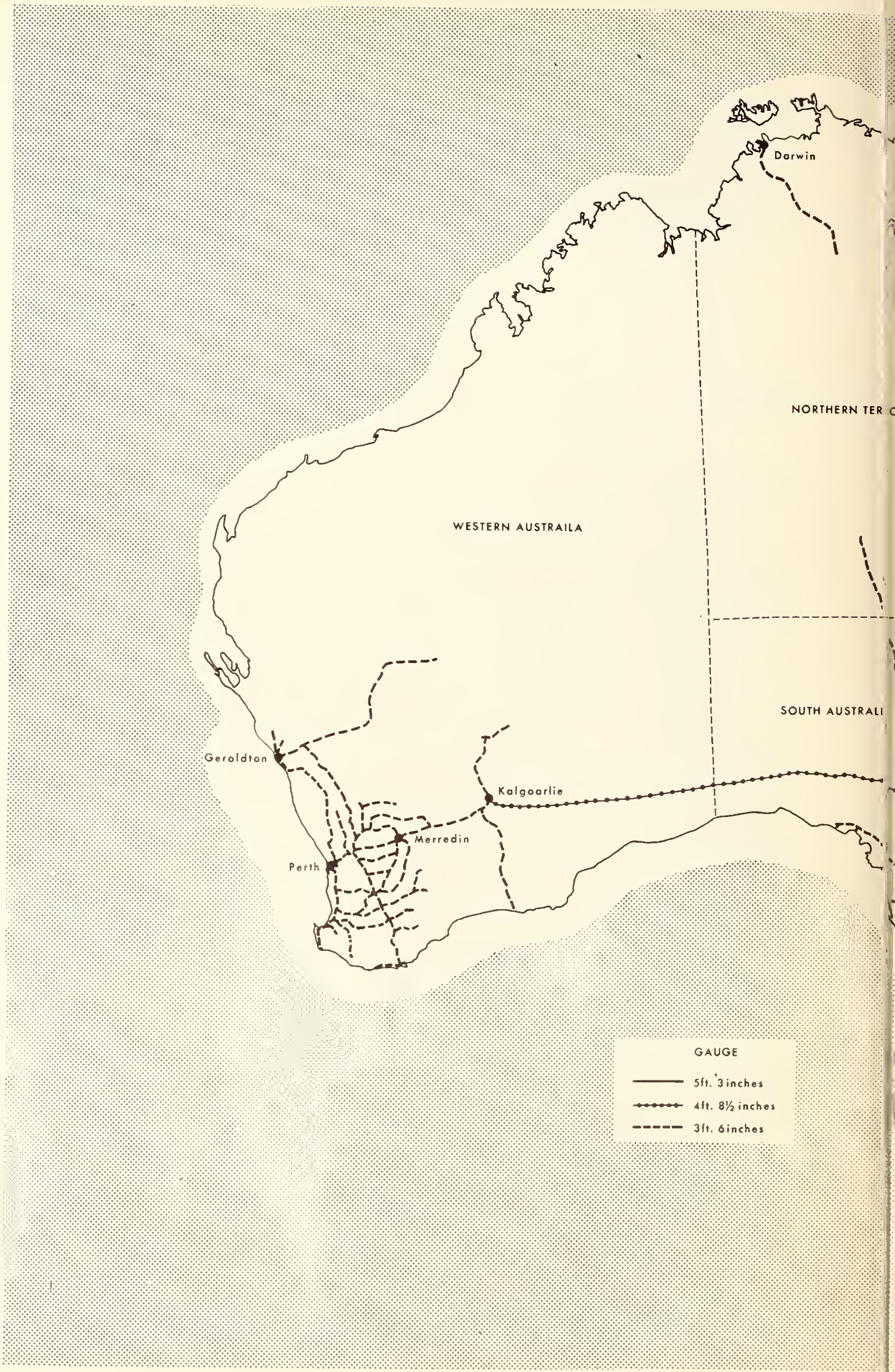
When the world wheat price is above the guaranteed price, an amount of average difference between export prices and the guaranteed price is paid into the Stabilization Fund. This may not exceed 17 cents per bushel. In addition, there is a maximum limit to the amount that can be accumulated in the Fund. From 1953 to 1963, this limit was £20 million ($44.8 million). Beginning with the 1963–64 crop, this was increased to £30 million ($67.2 million). There is no corresponding limit on the amount the Treasury may need to pro-

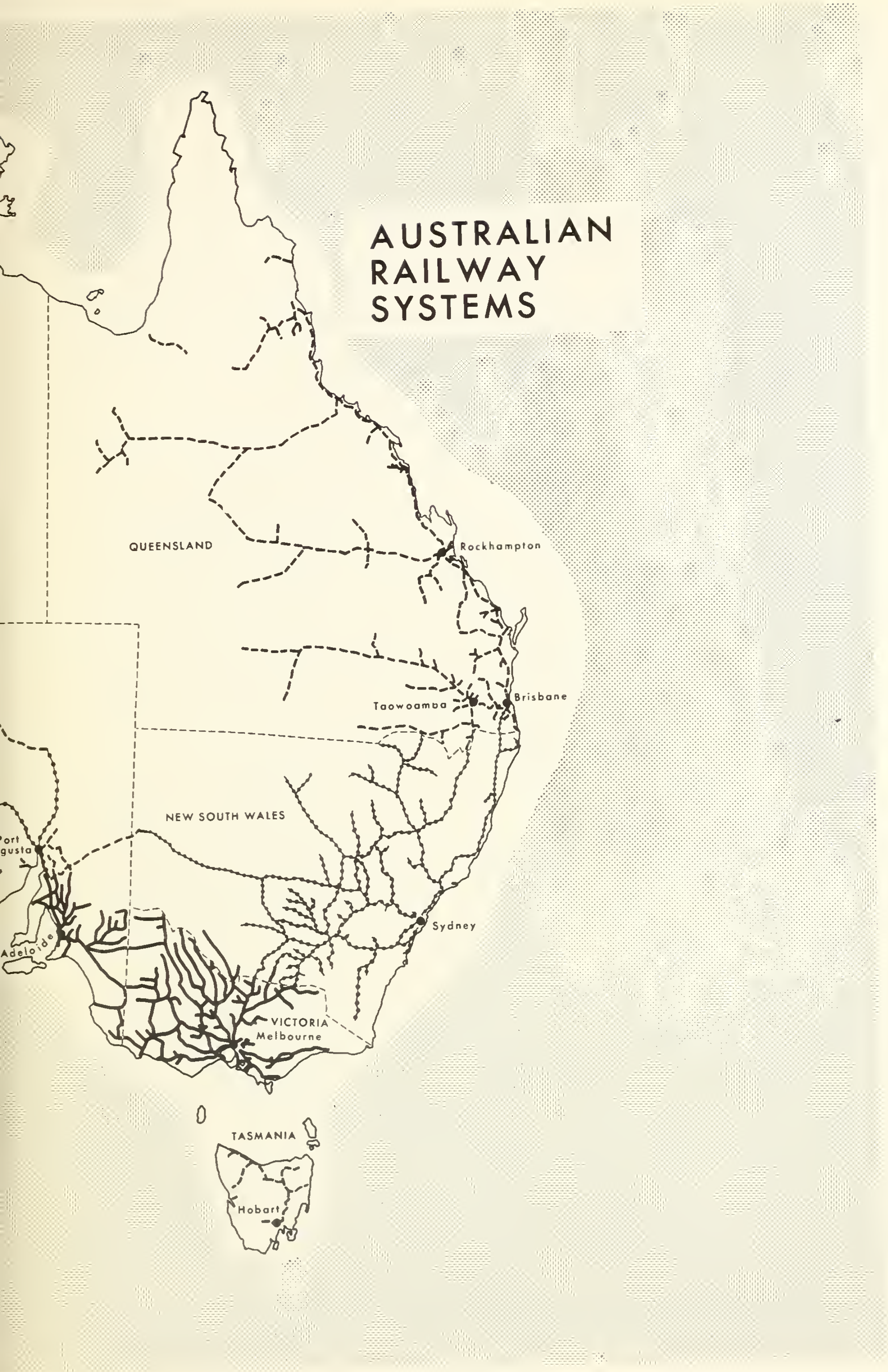
Table 4.—AUSTRALIAN WHEAT: Guaranteed price, average export return, and return to grower, 1953–54 to 1963–64

Year	Guaranteed price[1]	Average export return[1]	Return to grower[2]
	Dol. per bu.	*Dol. per bu.*	*Dol. per bu.*
1953–54	1.409	1.572	1.351
1954–55	1.409	1.405	1.342
1955–56	1.465	1.443	1.344
1956–57	1.531	1.593	1.409
1957–58	1.587	1.553	1.455
1958–59	1.624	1.477	1.475
1959–60	1.661	1.481	1.506
1960–61	1.699	1.500	1.527
1961–62	1.764	1.601	1.617
1962–63	1.773	1.52	1.616
1963–64	1.615	—	—

[1] F.o.r. main terminals. [2] Bulk wheat, eastern states, subject to deductions for individual growers' freight to terminals.

Note: Conversions from Australian currency to U.S. currency made at £A 1/00 = US$2.24. Figures have been rounded to the nearest tenth of a cent.


Darwin
NORTHERN TER
WESTERN AUSTRAILA
SOUTH AUSTRALI
Geraldton
Kalgoorlie
Merredin
Perth
GAUGE
5ft. 3inches
4ft. 8½ inches
3ft. 6inches



AUSTRALIAN RAILWAY SYSTEMS

AUSTRALIAN RAILWAY SYSTEMS

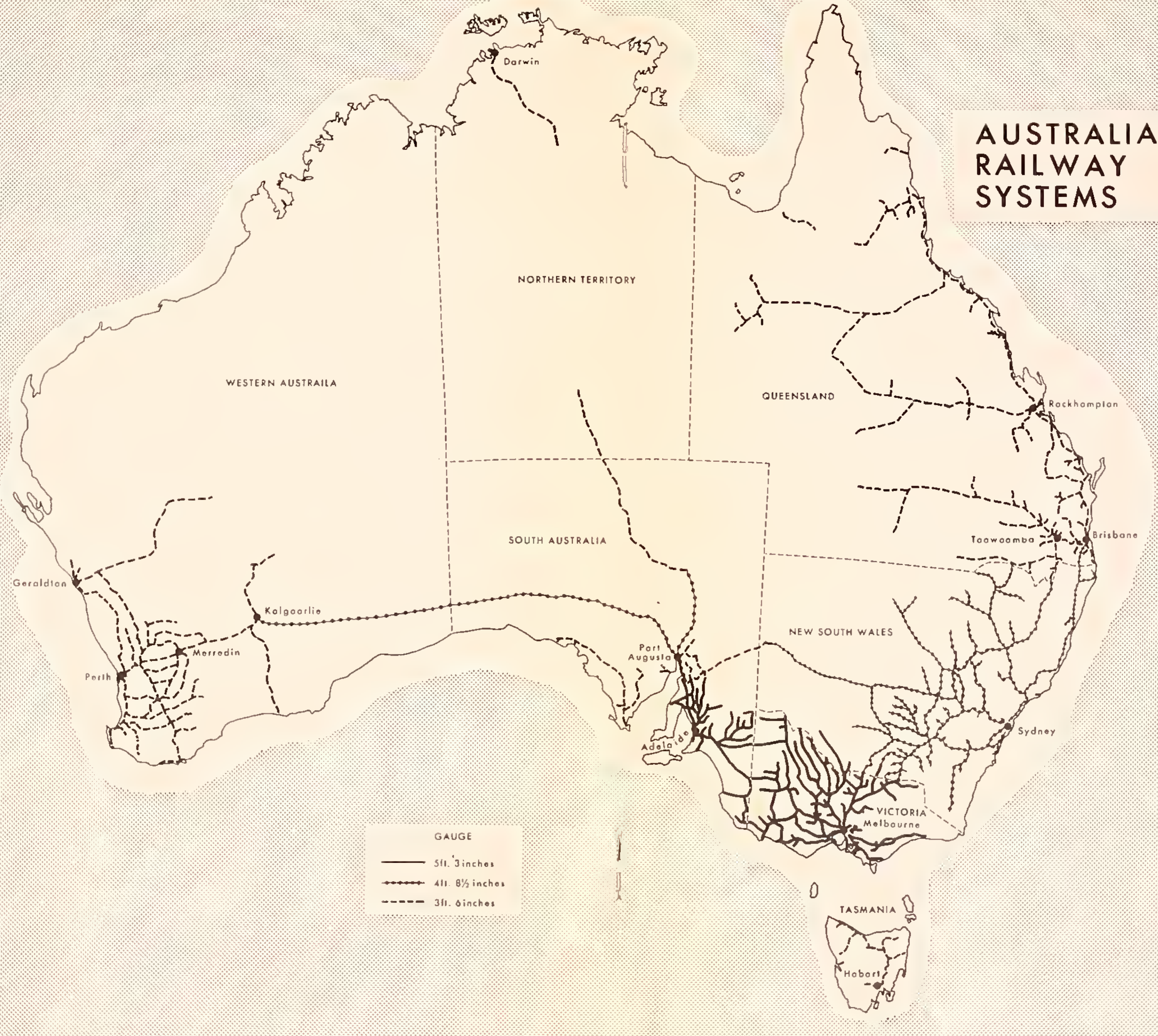


Table 5.—AUSTRALIA: Wheat Stabilization Fund, 1953–54 to 1963–64

Pool No. (Crop year)	Paid into Fund		Paid out of Fund	
	By growers	By C'wlth. Gov.	Total	Per bu.
	U.S. dol.[1]	*U.S. dol.*[1]	*U.S. dol.*[1]	*U.S. cents*[1]
17 (1953–54)	20,519,370	—	—	—
18 (1954–55)	—	—	422,296	0.4
19 (1955–56)	—	—	2,261,466	2.3
20 (1956–57)	3,559,064	—	—	—
21 (1957–58)	—	—	888,202	8.9
22 (1958–59)	—	—	14,632,081	14.6
23 (1959–60)	—	6,769,204	17,973,144	18.0
24 (1960–61)	—	19,900,532	19,900,532	19.9
25 (1961–62)	—	16,324,934	16,324,934	16.3
26 (1962–63)	—	25,351,050	25,351,050	25.4
27 (1963–64)[2]	(3)	(3)	(3)	(3)
Plus accrued earnings to June 30, 1961[2]	5,329,551	—	—	—
Total	29,407,985	68,345,720	97,753,705	(3)

[1] Conversions made at A£ 1-0-0 = US$2.24. [2] Reports in November 1964 indicate returns from export sales of Pool Number 27 were running at the guaranteed price ($1.61½) and no payments from the Commonwealth Treasury were expected. [3] Not available. [4] Earnings due to interest on funds paid into pool by growers in the period 1945-52 under a prior Stabilization Scheme. Source: Australian Wheat Board.

vide. Since the present Wheat Stabilization Fund was established in 1954, growers have paid into the Fund in only two seasons (1953–54 and 1956–57).

In effect, to make up the difference between costs and export income, the system is financed by an export tax or compensatory payments, depending on the guaranteed price and the actual export returns. Before the enactment of the Stabilization Act of 1954, prices paid to Australian growers were below world prices. As a result, during the 1945–51 period, growers paid a total of $169.4 million into the Stabilization Fund. Growers exploited the fact that they were subsidizing home consumption prices as an effective argument in securing subsequent legislation to increase prices they receive. However, they did receive the accumulated export "tax" as a payment.

Cost of production

This was originally a median-cost figure based on farms producing 100 acres or more of wheat. In other words, there were as many farms with costs higher as those with costs lower than the "cost of production." Since 1952, however, in terms of total production, this has been by no means a median figure, as much more than half the wheat is produced on farms where the cost of production is below the selected cost-of-production figure. The aim has been to select, instead, a weighted average cost such as represents the average grower's cost of production as a whole.

Guaranteed price

This is a price for FAQ wheat, f.o.r (free on rail) at main terminals (ports). Certain types of wheat draw a premium over the guaranteed price; these are produced principally in Queensland and New South Wales. These characteristics of low-test weight or high moisture draw a discount. By and large, grower returns vary with distance from rail and also with the costs of rail transport. Some states have rail levies on growers for compulsory hail insurance and building levies for construction of silos and handling facilities.

When exports exceed the guaranteed amount, as they usually do, the producer receives the average net proceeds obtained by the Wheat Board. The returns actually received by the producers, however, represent a blend price between the returns for the different sales of the Wheat Board, less discount, plus premiums, and less individual freight, cartage, insurance, and state levies.

In actual operation, the total return to growers has averaged less than the guaranteed price by about 16 cents per bushel in recent years. This is the average return on *all* wheat and not just the guaranteed amount. However, returns from the 1963–64 crop were about the guaranteed price of 14/5d ($1.61½ per bushel). Under these conditions, the Commonwealth Treasury's compensation was reduced.

For the 1963–64 crop, the guaranteed price was announced in August 1963. It was based on the most recent economic survey and contained substantial changes. The 1964–65 price is up about 2 cents from 1963–64 levels because of intervening increases in the cost regimen. The changes made in the official cost of production and guaranteed price for 1963–64 were significant because that was the first year of the new 5-year Scheme:

1. The price was lowered by 11.7 cents per bushel to 14/5d ($1.61½ per bushel).
2. The reduction was caused primarily by increased yields which the new economic survey revealed. The yield divisor was increased from 15 to 17 bushels. This is still a comfortable 3 bushels below recent average yields.
3. The guaranteed price covered 150 million bushels of export wheat instead of 100 million.
4. The limit of £20 million ($44.8 million), to be collected from growers, in the event export prices exceeded the guaranteed price, was increased to £30 million ($67.2 million).
5. It was believed that the lower guaranteed price would be closer to world prices and thus substantially reduce the obligation on the Commonwealth Treasury.

Table 6.—Final results of wheat pools, 1953–54 to 1962–63

Crop year	1953–54	1954–55	1955–56	1956–57	1957–58	1958–59	1959–60	1960–61	1961–62	1962–63
Pool number	17	18	19	20	21	22	23	24	25	26
Total wheat production (1,000 bu.)	197,958	168,617	195,443	134,455	97,566	215,121	198,501	273,716	247,178	306,500
Deliveries to Wheat Board (1,000 bu.)	183,201	152,751	180,762	120,130	81,326	199,417	179,339	251,481	224,288	285,483
Used for domestic consumption:										
Amount (1,000 bu.)	57,174	57,454	57,951	63,523	56,596	54,329	60,187	56,320	53,039	51,180
Home consumption price[1] (per bu.)	$1.582	$1.582	$1.507	$1.545	$1.605	$1.643	$1.680	$1.717	$1.764	$1.773
Exported:										
Guaranteed price (per bu.)	$1.409	$1.409	$1.465	$1.531	$1.587	$1.624	$1.661	$1.669	$1.773	$1.787
Amount covered by guarantee price (mil. bu.)	100	100	100	100	100	100	100	100	100	100
Exported as flour (1,000 bu.)	42,969	23,532	38,949	18,442	6,153	32,198	23,420	21,953	27,099	27,541
Exported as wheat (1,000 bu.)	83,201	71,458	83,918	38,455	20,291	112,524	95,254	173,629	144,313	206,265
Total exports (1,000 bu.)	126,170	94,990	122,867	56,897	26,444	144,722	118,674	195,582	171,412	233,806
Average return on flour (per bu.)	$1.554	$1.394	$1.396	$1.556	$1.566	$1.443	$1.418	$1.438	$1.615	$1.521
Average return on wheat (per bu.)	$1.581	$1.408	$1.541	$1.611	$1.549	$1.488	$1.497	$1.508	$1.527	$1.510
Average return on all exports (per bu.)	$1.572	$1.405	$1.443	$1.593	$1.553	$1.478	$1.482	$1.499	$1.601	$1.520
Stabilization Fund:										
Amount paid into (−) or paid from (+) (per bu.)	$−0.163	$+.004	$+0.018	$−0.063	$+0.034	$+0.101	$+0.151	$+0.102	$+0.095	$+0.109
Average realizations on export wheat and flour	$1.409	$1.409	$1.461	$1.530	$1.587	$1.579	$1.633	$1.601	$1.696	$1.629
Average storage and handling costs (per bu.)	6.12¢	7.36¢	7.97¢	8.47¢	8.44¢	6.71¢	7.32¢	6.61¢	6.97¢	6.02¢
Average return to grower[2]	$1.351	$1.342	$1.344	$1.409	$1.455	$1.475	$1.506	$1.527	$1.617	$1.616
Average freight cost to main terminals (per bu.)	15.57¢	14.68¢	15.33¢	14.44¢	13.71¢	15.37¢	16.24¢	16.67¢	16.91¢	17.87¢
No. months required to finalize pool	44	42	34	36	18	22	20	28	45	19

---

[1] Price shown is fixed, does not reflect premiums. [2] Bulk wheat, Eastern states, subject to deductions of individual growers' freight.

Note: Conversions from Australian to U. S. currency made at A£ 1/0.0 = US$2.24. Table lists price and quantity factors related to marketing the ten pools from 1953–54/1962–63. Prices shown are averages. In the case of domestic wheat, the figure shown does not reflect prices paid for premium wheat. Farmers delivering bagged wheat received about 3.7 cents above the guaranteed price to cover the costs of bagging. In Western Australia, the guaranteed price has been 1.8 cent per bushel higher to reflect the ocean freight advantage of that state. Also, the amount paid into or from the Stabilization Fund applies only to the first 100 million bushels of export wheat.

In general, the price received by the farmer for wheat delivered to his nearest receiving station is the figure "average return to grower," less "average freight."

Production controls do not enter into the operation of the system. There are none in Australia, nor does there appear to be any convenient mechanism for controlling production. With production and exports at record highs and carryovers at 18 million to 24 million bushels (approximately 6 percent of production) in the past 3 years, little attention is given to controlling production.

Mandatory production controls would require not only legislation by the Commonwealth Parliament, but the enactment of identical legislation by the parliaments of all five mainland wheat-producing states.

Handling and storage

Most of Australia's wheat crop is delivered directly from fields by truck to country elevators. These elevators, while owned and operated by a farmers' cooperative, or by a state grain-handling agency, are the sole authorized receivers of wheat for the Australian Wheat Board.

Since 1955, farmers have shifted rather rapidly to bulk wheat handling, and today 94 percent of deliveries are bulk, compared with 82 percent in 1959. Bulk storage capacity increase 22 percent in the 5-year period 1958–63. Total bulk storage capacity now exceeds 325 million bushels and additional capacity is under construction.

Different types of interior storage structures are used in Australia; for the most part, these are simpler in design and cheaper to construct than those used in the United States. While upright silo-type elevators are not uncommon, most interior storage would be considered flat-bulk storage. Since there are no separate bins which can be sealed off, wheat must be carefully inspected before unloading in order to divert off-grade, high moisture, or premium wheats. There is practically no fumigation of grain at interior storage points.

In Western Australia, where rainfall is low, large "jack-bins" are constructed from corrugated sheet iron sections which are held in place with timber bracings.

Once delivered to the handling authority, the wheat becomes part of the season's "Wheat Pool." Its movement to central terminals is then directed by the Australian Wheat Board.

Wheat pools

For more than forty years, the Australian wheat grower has marketed his wheat through a system of wheat pools.

In general, a marketing pool is an arrangement by which a number of producers assemble all their product or a portion of it, and offer it for sale through a central sales agency. The pooling system may provide a number of marketing functions such as assembling, grading, and storage. The consigning producers agree to take their share of the pooled receipts and assume their share of the pool costs.

Wheat pools, when they first made their appearance in Australia, were compulsory, instituted as part of the national wartime measures during World War I and shortly afterwards. In 1921, after seven years of compulsory pools, their continuation was rejected in a national ballot by growers. For the next 20 years, voluntary pools were operated with varying degrees of success. In Western Australia, for example, growers formed a voluntary wheat pool in 1922, which has operated continuously since that date. Originally, it was founded on the six principles of the Rochdale Plan for cooperatives and was truly a voluntary cooperative venture. World War II again brought compulsory pooling, and by 1948 the pooling system became an integral part of the centralized marketing system which began to emerge as a result of the Wheat Stabilization Act, which was passed in 1948.

In the intervening years, voluntary pools in Australia continued to add marketing services to their systems. While each state pool was separate, all worked together very closely. In the 1920's, Australian growers had had no system of certifying weights and quality for their exports at the time of loading. Growers became dissatisfied with the results of a system which left them at the mercy of determinations made by buyers upon arrival at destinations. Steps were taken to form their own superintendence company and in 1926 Australia Outturns Pty, Ltd., was formed by the trustees of the Western Australia Wheat Pool. Shortly thereafter, pools and cooperatives in three other states became partners in Australia Outturns.

Wheat pools of Australia also banded together to appoint an agent who had a seat on the Baltic Exchange which was the most important grain market then in existence. In addition, steps were taken in some states to acquire control of ship chartering and stevedoring functions.

These examples are cited to show that the Australian wheat grower has for years been working toward securing control of the marketing functions that service the sale of his product. By 1948, when the present integrated system came into being, wheat growers in Australia had already taken many of the necessary steps in that system.

To learn how the pooling system is integrated with the marketing and guaranteed price systems, it may help to examine a particular wheat pool.

The Australian marketing year runs from December 1 to November 30. Wheat harvest begins in November and normally is completed by late January or early February. In the 1960–61 season, Australian farmers produced 273,716,000 bushels of wheat. Of this amount, 251,481,104 bushels were delivered to the Australian Wheat Board; the balance of 22.3 million bushels remained on farms for feed, seed, and other uses.

Farmers take their wheat to elevators operated by firms that are designated by the Australian Wheat Board as official handling agents. In most cases, these agents are farmer cooperatives. The Wheat Board designates each year's crop by successive pool numbers. The 1960–61 crop was designated as Pool No. 24; deliveries totaled 251,481,104 bushels.

Data on deliveries from each state follow:

	Bushels
New South Wales	72,991,425
Victoria[1]	66,886,566
South Australia	43,706,280
Western Australia	59,012,743
Queensland	8,821,225
Tasmania	62,865
Total [2]	251,481,104

---

[1] Victorian deliveries include some wheat grown in New South Wales but delivered to licensed receivers in Victoria. Because of the geographic location of wheat production, and the rail transportation system, with respect to state boundaries, this is the only place where wheat produced in one state is delivered to another state. [2] Receivals were divided into: bulk, 218,346,000 bu.; bagged, 33,135,000 bu.

Under the Wheat Stabilization Plan and the cost of production survey, farmers were guaranteed for the 1961–62 crop a price of 15/2 (15 shillings, two pence) or $1.70 per bushel f.o.r. ports, bulk basis. This price applied to all wheat used domestically [2], plus 100 million bushels, or its equivalent in flour, exported.

The Wheat Board sold 55 million bushels domestically, out of the total 251.5 million. Growers who delivered premium grade wheats received premiums over the guaranteed price. In the sale of domestic wheat, the Wheat Board encountered no risk, on behalf of the Commonwealth Treasury, of failing to meet the guaranteed price; however, the Wheat Board was not able to export at the guaranteed price. In Marketing Pool No. 24, nearly 200 million bushels were exported as wheat and flour over a period of 28 months. Net returns from export sales of wheat averaged $1.508 per bushel, approximately 20 cents below the guaranteed price.

Disposition of Pool No. 24 is shown below:

	Bushels
Domestic sales:	
Flour	38,813,542
Stock feed	13,200,954
Breakfast food, etc.	1,905,985
Total domestic	54,920,481
Export sales:	
Wheat	173,628,830
Flour	21,952,765
Total export	195,581,595
Total [1]	250,512,076

---

[1] The discrepancy between total receipts and total disposition (969,032 bushels) represents .0038 percent, which is statistically acceptable. Also, receipts were calculated into bushels based on gross weight.

Flour exports for Pool No. 24, which totaled 22 million bushels, returned an average of $1.438 per bushel (wheat equivalent). The average net return on all wheat and flour (195.6 million bushels) was $1.50; however, the guaranteed price of $1.70 at that time was applicable to a maximum of 100 million bushels of export wheat. The shortfall of approximately 20 cents per bushel on 100 million bushels was $20 million. In order to meet the guaranteed price to growers on Pool No. 24, the Treasury provided £8,884,116 ($19,900,532).

Before the beginning of each marketing year on December 1, the amount of the first advance payment on wheat deliveries to the new pool is announced. For Pool No. 24, the first payment was set at 9 shillings ($1.01) per bushel for bulk wheat, less freight, f.o.r. ports. Over the next 27 months, growers received five additional payments, ranging from 22 cents per bushel to the final payment of 4 cents, which was made on March 12, 1963. The six payments totaled 13/7.575 ($1.53⅓) per bushel. It should be remembered that this figure is the average payment to growers, less freight to terminals. Total deductions for freight from growers' sidings (country elevators) to port terminals averaged 16⅔ cents per bushel. Storage costs, which are borne by the Wheat Board, averaged 6.6 cents per bushel for Pool No. 24. In addition, a ¼-cent-per-bushel research tax purposes was collected on all deliveries.

Transportation

Practically all of the Australian crop is handled on a bulk basis and wheat moves from field to country elevator by bulk truck. At harvesttime, one can see lines of trucks waiting their turns to unload, much the same as in the United States. At the peak of harvest, farmers may wait for two hours or more.

---

[2] Domestic price was 15/4, or 2d higher than the guaranteed price. The additional 2 pence is added to cover transportation of wheat to Tasmania, a wheat-deficit state.

Table 7.—AUSTRALIAN WHEAT: Bulk storage capacity, January 1, 1964

State	Country storage	Bulk storage at mills	Port terminals	Total
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
New South Wales	75,346	5,571	11,700	92,617
Victoria	64,253	5,708	22,000	91,961
Western Australia	75,515	1,820	24,020	101,355
Southern Australia	20,320	1,403	8,050	29,773
Queensland	9,445	807	1,636	11,888
Tasmania	—	144	—	144
Total	244,879	15,453	67,406	327,738

In general, country receiving stations are fairly conveniently located in the wheat-producing areas. From here, the wheat moves by rail to the port terminals. In only a few cases are farmers able to truck their wheat directly to the port terminal.

There are five different rail gauges in Australia and each state maintains and operates its own system in addition to the Commonwealth railway system. There are 25,620 miles of railroad line in Mainland Australia. Nearly half of this is 3′6″ gauge; 30 percent, 4′8½″; 25 percent, 5′3″; and about 30 miles each, 2′6″ and 2′0″ gauge line. The principal commodities hauled to the interior farming regions, and away, are petroleum products, fertilizer, wool, sheep, cattle, and grain. Regardless of the gauge, rail cars are generally of 16- to 20-ton capacity. In most cases, the cars are open gondola-type and require a canvas cover to protect the grain in transit. The unloading operation, while somewhat mechanized, requires considerable hand labor.

While most of Australia's wheat is produced within 175 miles of ports, this advantage is offset by rather high freight rates. In the 10 years, 1953–54 to 1962–63, the freight cost from interior receiving points to port has averaged 26.1 cents per hundredweight. All state rail systems are said to be operating at a loss, by a variety of methods absorbing these losses or otherwise subsidizing the movement of freight.

Wheat hauling on these lines has many similarities to that of the Pacific Northwest region of the United States, including type of wheat grown and distances between ports and interior producing regions. Australian rates are approximately one-third higher than prevailing rates in Washington, Oregon, and northern Idaho.

While the system appears to be expensive and inefficient, it does offer advantages in marketing wheat. The rail system accommodates the practice of marketing each state's wheat on separate FAQ standards. With the exception of a small amount of New South Wales wheat, which is marketed through facilities in Victoria, there can be no comingling of wheat.

Export marketing

As the sole marketing agent the Australian Wheat Board functions as the single exporter of Australian wheat. In this respect, the Board functions in the same manner as the private grain exporting companies that market U.S. wheat; actual selling prices are not public information in either case, unless released by the buyer or the seller.

Australia has many advantages as a wheat producing country. However, from an export standpoint, it is located tremendous distances from the world's wheat markets and has a tremendous ocean freight disadvantage.

In order to adjust to this disadvantage, the Australian wheat marketing system long ago adopted a policy of pricing wheat on a c.i.f. basis to the United Kingdom. This was their principal market for many years.

To accommodate destination pricing, the Australian Wheat Board engages in ship chartering and is the largest ship charterer in Australia.

The determination of destination prices for other markets, however, is more complicated than merely replacing the ocean freight to the U.K. with the ocean freight to the other destination. The system seems to suggest that while net returns from c.i.f. pricing to distant markets will be less in order to remain competitive, the advantage of proximity for more nearby markets is not fully reflected in these c.i.f. prices.

In recent years, the Australian Wheat Board has been selling more wheat on an f.o.b. basis than in earlier years. This has probably been necessary in order to accommodate the Japanese market as Japan buys all of its wheat through Japanese trading firms on a C&F basis; however, these firms procure the wheat on an f.o.b. basis and arrange their own freight bookings.

While most of the Australian Wheat Board's sales are handled directly by the Board itself, they do on occasion use international grain trading firms as their agent.

At one time, Australia was the world's largest flour exporter. Following World War II, a number of nations shifted from flour importing to flour milling and Australia's flour exports, like those of other major suppliers, dropped.

In the period 1952–53 to 1955–56, flour exports ranged from 30 million to 40 million bushels (wheat equivalent) and represented from 30 to 50 percent of Australia's total wheat exports. Since then, flour exports have fallen below the 30 million bushel mark and have represented only 10 to 12 percent of total wheat exports for the past three years.

In order to maintain its competitive position in the

Table 8.—RECEIPTS OF WHEAT[1]: Australian Wheat Board, 1958–59 to 1962–63

State and category of wheat	1958–59	1959–60	1960–61	1961–62	1962–63
	Mil. bu.	*Mil. bu.*	*Mil. bu.*	*Mil. bu.*	*Mil. bu.*
New South Wales:					
Northern f.a.q.	12.228	11.716	10.210	10.427	20.495
South/west f.a.q.	41.581	47.933	56.636	50.916	66.833
Premium-hard	6.062	7.236	5.915	6.193	10.618
Premium-soft	.130	.188	.230	.248	.678
Total	60.001	67.073	72.991	67.784	98.624
Victoria:					
F.a.q.	41.224	37.099	66.887	55.120	67.169
Total	41.224	37.099	66.887	55.120	67.169
South Australia:					
F.a.q.	—	—	10.766	19.849	22.392
Semi-hard	20.621	6.040	17.055	10.888	12.727
Soft	8.928	3.072	15.885	(2)	(2)
Total	29.549	9.112	43.706	30.737	35.119
Western Australia:					
F.a.q.	53.063	53.469	58.725	60.114	66.482
Premium-hard	.207	.597	.233	.292	.351
Premium-soft	.084	.066	.055	.052	.061
Total	53.354	54.132	59.013	60.458	66.894
Queensland:					
Premium-hard	15.206	11.832	8.821	9.981	17.535
Total	15.206	11.832	8.821	9.981	17.535

[1] All wheat, for domestic as well as export sales. [2] Soft wheat included with f.a.q.
Source: Australian Wheat Board.

Table 9.—WHEAT: Australian Rail Transportation Rates and U.S. Pacific Northwest[1] Rates for Comparable Distances

Rates by area	Distance 100 miles	200 miles	300 miles	400 miles
	U.S. cents per cwt.	*U.S. cents per cwt.*	*U.S. cents per cwt.*	*U.S. cents per cwt.*
Australian:				
Queensland	25.9–35.8	42.0–53.1	47.2–65.8	58.4–78.0
New South Wales	22.2	33.8	39.2	43.9
Victoria	21.3	28.1	32.5	36.7
South Australia	17.9	21.7	25.1	27.8
Western Australia	20.0	26.7	32.5	35.9
United States:				
Pacific Northwest	[2] 9.0 [3] 14.5	[4] 18.5	[5] 23.5 [6] 25.5	[7] 33.5

[1] This comparison is made because the Australian situation more closely resembles the U.S. Pacific Northwest than any other wheat producing area in the United States. Both produce white wheats, and the production areas are approximately the same distances from port terminals. (For Pacific Northwest rates, two or three routes are used for each distance shown.) [2] The Dalles to Portland, Oregon (84 miles). [3] Moro (130 miles) and Arlington (138 miles) to Portland, Oregon. [4] Heppner (193 miles), Pendleton (215 miles) to Portland, Oregon, or Pasco, Washington to Portland, (231 miles) or Seattle, Washington (248 miles). [5] Hooper to Seattle, Washington or Portland, Oregon (300 miles). [6] Winona, Washington to Portland, Oregon (314 miles). [7] Craigmont, Idaho to Portland, Oregon (400 miles).

remaining flour markets, Australia refined its destination pricing policy on flour exports. Detailed market price information is not available; however, an examination of the net realizations from flour exports in recent years shows that returns have run from 1¢ to 7¢ per bushel less than returns realized from wheat exports.

Export returns from wheat and flour over a period of years follow, showing the difference in returns between wheat as grain and wheat as flour:

Pool No.	*Year*	*Wheat US$ per bu.*	*Flour US$ per bu.*	*Difference US$ per bu.*
17	1953-54	1.581	1.554	0.027
18	1954-55	1.408	1.349	.059
19	1955-56	1.464	1.396	.068
20	1956-57	1.611	1.556	.045
21	1957-58	1.549	1.566	.017
22	1958-59	1.488	1.443	.045
23	1959-60	1.497	1.418	.079
24	1960-61	1.508	1.438	.070
25	1961-62	1.527	1.615	.088
26	1962-63	1.521	1.510	.011

In 1961-62 flour exports totaled 27 million bushels and represented 12 percent of total wheat exports. Sixty-three percent of the flour exports went to Pacific and Southeast Asian destinations. In recent years, Ceylon has been Australia's largest flour market, followed by Malaya, the United Kingdom, and Singapore. However, Ceylon, Malaya, Singapore, and Thailand have either begun construction of flour mills or else have announced plans to do so.

For several years, Mainland China has been the largest purchaser of Australian wheat and flour, with contracts for 1960 to 1965 as follows:

Date of contract		*Shipping period*	*Terms*
1960:			
Dec.	11.2	Jan.–Mar.1961	Cash
1961:			
Jan.	30.3	Jan.–July 1961	Cash
May	37.3	July–Dec.1961	10% cash 40%, 6 mos.; 50%, 12 mos.
1962:			
Feb.	24.3	Feb.–May 1962	Do.
June	1.8	June–July 1962	Do.
Oct.	23.3	Oct.1962–Mar.1963	10% cash; 20%, 6 mos.; 20%, 9 mos.; 50%, 12 mos.
Dec.	[2]47.1	Jan.–June 1963	Do.
1963:			
May	46.0	June–Nov.1963	Do.
June	4.0	Sept. and after	Do.
Nov.	41.0	Dec. and after	Do.
1964:			
Apr.	21.0	June–Nov.	Do.
Oct.	55.0	Dec.1964.–May 1965	
1965:			
Apr.	110.0	Through Nov.	Do.

---

[1] Sales made with the usual option, quantity 10% more or less. In almost all cases, the additional 10% has been bought. [2] 1.1 mil. bu. from 1961-62 season. Source: Australian Wheat Board.

Wheat Board membership

The Australian Wheat Board is the sole exporter of Australian wheat and flour. The first board was appointed on September 21, 1939. The Commonwealth Government appointed all members, which included the Chairman, three representatives of merchants, two pooling interests, one bulk handling authority, and two growers. The grower group included one representing organized growers and one representing unorganized growers. Shortly thereafter, at the request of the industry, a millers' representative and two additional growers were added. In October 1942, the grower representation was expanded to seven, and in 1944 procedure for a ballot election of grower representatives in each mainland state was held.

Today, the Wheat Board is composed of a Chairman, ten grower representatives (two from each of the five mainland wheat producing states), six government appointees, one commercial member, two finance members, two employees' representatives, and a flour mill representative.

Grades and standards

Australian wheat has been marketed on a *"fair average quality"* (FAQ) basis for 70 years.

Each year, an FAQ standard sample is established for each state's wheat crop. Specimens drawn at every delivery point are subsequently combined to produce a composite weighted average sample of the crop for each state. The bushel weight is determined for the official FAQ sample and sealed samples are sent to foreign buyers. This provides the basis for sample selling.

The term "fair average quality" is somewhat of a misnomer since the only "quality" factor measured is test weight. While this indicates milling quality in terms of yield, it in no way refers to baking quality. The term of "fair average sample" would be more descriptive.

Table 10.—WHEAT AND FLOUR[1]: World exports, by major exporter, 1955–65

Year ending June 30	United States[2]	Canada	Australia	Argentina	USSR	Other	Total
	Mil. bu.	*Mil. bu.*	*Mil. bu.*	*Mil. bu.*	*Mil. bu.*	*Mil. bu.*	*Mil. bu.*
1955	275	252	93	132	64	155	971
1956	345	289	102	115	37	152	1,040
1957	459	282	126	98	1160	113	1,328
1958	402	317	61	78	144	188	1,190
1959	443	300	75	103	220	180	1,321
1960	510	279	116	77	203	168	1,353
1961	662	342	183	70	186	133	1,576
1962	718	365	230	86	186	164	1,749
1963	638	331	176	66	196	185	1,592
1964[3]	860	554	287	102	45	232	2,080
1965[4]	725	435	240	160	30	225	1,815

[1] Includes wheat equivalent of flour. [2] Includes products and shipments for relief or charity. [3] Preliminary. [4] Partly estimated.

Test weight is the key factor in establishing the FAQ sample. Minimum FAQ test weight[3] has been 60 lb., based on the Imperial bushel, which is 3.2 percent larger than the Winchester bushel used for U.S. test weights. A bushel of wheat with a test weight of 60 pounds on the Imperial system would have a test weight of 58.08 pounds on the U.S. Winchester bushel basis.[4]

The term *"dockage"* in Australia means a deduction in price to the grower. For example, the 1963 crop in Western Australia ran heavily to low-test weights because of stem rust. A farmer delivering wheat of test weight below 60 pounds[5] but 58 pounds or better was "docked" four pence (3.63 cents) per bushel; if test weight was below 58 pounds, he was "docked" six pence (5.6 cents per bushel).

Wheat registering a test weight below 60 pounds, or containing more than 3 pounds per bushel of unmillable material, is classed as *"off-grade"*. In recent years, there has been a fairly good export market for Australian "off-grade" wheat.

Regardless of test weight or other factors, wheat containing more than 3 pounds per bushel of *unmillable material* is classed as "off-grade" and is binned and marketed accordingly. The determination is made at the time of sampling, before the farmer's delivery is unloaded. Method used is to separate unmillable material from sample by use of a sieve designed by the Australian Wheat Board. The before-and-after official test weights are checked to determine the amount of unmillable material.

In order to be received by the authorized handling authority, wheat must not exceed 11.5 percent *moisture*. If a farmer delivers wheat of higher moisture, his load is rejected and he must employ whatever means he can to reduce the moisture before it can be accepted.

In addition to FAQ, Australia also markets "Premium," "Semi-Hard," and "Durum" wheats.

The principal source of *Semi-Hard* grade is Southern Australia. Semi-Hard wheat normally runs in excess of 11.5 percent protein and is graded—largely on the basis of visual inspection—to be of even color and free from "mottled" appearance.

A small amount of *durum wheat* is grown in New South Wales; this also commands a premium price. Production in 1962–63 was 65,000 bushels, which averaged a premium of 30 cents per bushel. Durum wheat is used entirely for domestic consumption.

Premium wheats are now marketed from the states of New South Wales and Queensland. A Premium wheat must contain a minimum amount—12.5 percent of protein, as well as be composed of certain specific varieties of wheat, mainly Gabo-type. Visual inspection for color uniformity is also important.

Queensland wheat is not marketed on an FAQ basis. Queensland grades are "Q.1", "Q.2", "Q.2a", and "feed wheat." The criteria for "Q.1" read "Wheat which is bright, dry, and free from foreign substances, with good condition and color, and of superior milling quality in every respect." Grades "Q.1" and Q.2" are premium wheats and command higher prices in both export and domestic markets. In 1960–61, "Q.1" wheat averaged 9 cents per bushel premium, "Q.2" wheat an 8 cent premium. The Queensland crop normally runs about 50 percent "Q.1" premium wheat, and has consisted of as much as 90 percent "Q.1" grade.

Over the past five years, about 70 percent of Queensland production has been consumed domestically. The portion going into export varies greatly with respect to wehat as grain and wheat as flour.

Western Australia produces a low-protein, soft wheat which also draws a premium. In 1960–61, for example, local millers paid premiums averaging 19 cents per bushel on 351,000 bushels of wheat; 87 percent of this was composed of the variety Gabo.

A new basis of premium payments for soft wheats went into effect for the 1964–65 crop. A flat premium of 6d (5.6 cents) per bushel will be paid for Pinnacle

---

[3] The Winchester bushel contains 2,150.42 cubic inches compared with 2,219.36 cubic inches in the Imperial bushel.

[4] Changed to 59 pounds in 1964.

[5] Based on Imperial bushel.

Table 11.—AUSTRALIA: Wheat and flour exports by destination, 1959–60 to 1963–64

Destination	1959–60	1960–61	1961–62	1962–63	1963–64
	1,000 m. t.	*1,000 m. t.*	*1,000 m. t.*	*1,000 m. t.*	*1,000 m. t.*
North and Central America and Caribbean:					
Canada	—	—	(1)	—	0.1
United States	—	—	(1)	—	.2
Bahamas	—	—	.2	—	—
Barbados	—	—	—	1.5	3.2
French West Indies	(1)	—	—	—	—
Jamaica	—	—	(1)	1.2	2.1
Leeward and Windward Is.	—	—	(1)	—	.3
Trinidad and Tobago	—	(1)	—	1.1	4.5
Total	(1)	(1)	.2	3.8	10.4
South America:					
Brazil	—	—	(1)	—	—
British Guinea	—	—	(1)	.6	.8
Chile	—	—	—	19.4	—
Peru	—	—	1.7	.5	.8
Surinam	—	—	—	.3	.5
Total	—	—	1.7	20.8	2.1
Europe:					
Belgium-Luxembourg	0.2	2.3	—	—	—
France	—	—	12.3	—	—
Germany, West	115.1	120.5	303.6	54.7	226.0
Italy	—	453.2	234.5	—	—
Netherlands	—	12.9	5.1	—	.1
EEC	115.3	588.9	555.5	54.7	226.1
Austria	26.6	9.2	—	—	—
Greece	—	.1	(1)	—	—
Ireland	23.1	74.4	38.9	35.2	49.1
Norway	—	27.8	67.3	74.5	113.5
Portugal	—	—	.1	.3	.2
Spain	—	34.2	394.1	82.5	33.6
Switzerland	—	—	3.7	—	.1
United Kingdom	629.0	816.2	716.8	524.4	775.5
Cyprus	.2	—	—	—	.2
Malta	23.2	11.4	17.0	17.0	18.5
Albania	—	28.6	25.0	23.9	38.6
USSR	—	—	—	.6	1,522.9
Total Europe	817.4	1,590.8	1,818.4	816.1	2,780.3
Africa:					
Algeria	—	31.2	12.1	—	—
Egypt	11.0	75.2	108.5	.6	9.6
Morocco	.6	—	3.7	—	—
Somali Republic	—	.1	.4	.6	.3
Tunisia	—	9.1	7.5	—	—
Africa (continued):					
Mauritius	—	29.7	16.8	17.5	26.6
Seychelles	—	1.2	1.3	1.0	10.3
British East Africa	7.2	13.9	29.7	5.0	15.5
Ghana	—	(1)	(1)	.2	.3
Nigeria	22.1	—	(1)	—	—
Sierra Leone	(1)	—	—	—	—
Congo (Leopoldville)	(1)	—	.8	.2	.1
Mozambique	7.3	13.3	8.0	2.2	26.1
Rhodesia and Nyasaland	95.8	74.7	80.2	99.1	112.7
South Africa, Rep.	61.7	.2	104.0	56.1	—
Others, unspecified	.8	.1	—	—	—
Total	206.5	248.7	373.0	182.5	201.5
Asia:					
Aden	40.9	49.6	69.1	69.2	83.6
Arabian Pen., n.e.c.	18.9	23.6	19.4	23.5	3.6
Bahrein	7.4	12.0	4.9	5.8	5.1
Iran	121.6	50.4	—	19.2	32.1
Iraq	239.7	268.2	21.5	—	132.7
Israel	—	—	—	—	6.6
Jordan	—	11.4	—	—	—
Kuwait	11.8	24.6	15.2	19.3	19.7
Lebanon	26.0	43.0	110.3	85.2	143.6
Saudi Arabia	8.4	8.8	22.5	33.0	36.0
Burma	12.2	10.0	13.5	23.3	9.4
Ceylon	180.8	147.3	223.6	129.6	157.5
Mainland China	(1)	1,158.3	1,928.1	2,074.7	2,448.5
Hong Kong	72.0	73.2	94.9	75.6	60.3
India	318.6	133.7	576.1	194.4	206.1
Indonesia	40.0	119.6	29.3	6.9	6.1
Japan	378.6	356.8	427.2	344.9	511.7
Korea, North	—	76.1	34.1	46.1	—
Korea, Republic of	—	—	—	—	85.5
Malaysia	225.2	221.0	199.8	193.1	227.8
Pakistan	105.5	105.6	.5	159.1	56.0
Philippine Republic	26.0	8.8	3.1	19.6	85.8
Portuguese possessions, Asia	5.5	3.7	1.8	—	1.7
Taiwan	1.0	11.4	6.5	6.0	97.1
Thailand	18.4	18.2	17.5	21.6	33.8
Vietnam, Laos, and Cambodia	—	(1)	.4	7.2	12.0
Others	15.8	—	28.6	.9	21.9
Total	1,874.3	2,935.3	3,847.9	3,558.2	4,472.2
Oceania	254.3	206.4	211.0	205.2	308.1
Others, unspecified	.9	5.1	.8	4.2	74.0
World total	3,153.4	4,986.3	6,253.0	4,790.8	7,845.5
Equiv., 1,000 bu.	115,868	183,215	229,758	176,027	288,308

---

[1] Less than 50 metric tons.

wheat, with 9 percent protein or less; other suitable wheats will receive a 2d (1.9 cents) premium. It is believed this will encourage the production of the Pinnacle variety, particularly on irrigated land.

In 1962–63, flour millers in *New South Wales* paid premiums averaging 14 cents per bushel on 2.6 million bushels of local high protein wheats. The highest average premium was 30 cents. In addition, 678,000 bushels of soft wheat commanded a premium of four cents per bushel, bringing the total amount of premium wheat sold to flour millers to 3.3 million bushels at an average premium of 12 cents per bushel.

Research and quality

The central agency for research in Australia is the Commonwealth Scientific and Industrial Research Organization (CSIRO). It can be likened to the USDA's Agricultural Research Service except that CSIRO conducts research in areas other than agriculture.

With respect to wheat, CSIRO conducts basic research while the state departments of agriculture carry out most applied research. While these departments work independently of each other, research efforts are coordinated through the Wheat Industry Research Council and state Wheat Industry Research Committees. The Council is composed of representatives from the various state departments of agriculture, a representative from CSIRO, two representatives from the Australian Wheat Growers Federation, and a representative from the Australian Department of Primary Industry who serves as chairman. The state committees are composed of representatives of universities, state departments of agriculture, and wheat growers' organizations.

Wheat research in Australia has been greatly accelerated as the result of a wheat tax paid by growers and matched by the Commonwealth Government. This system for financing research resulted from the passage of the Wheat Tax Act of 1957. (Before that time, the growers of Western Australia had been contributing voluntarily to a research fund.) The wheat research tax is applicable to all wheat delivered to the Australian Wheat Board and amounts to about a quarter-cent per bushel.[6] In the six years of operation, growers and the government have contributed a total of some $6 million a year for wheat research.

Research plans currently under way, as formulated by the Wheat Industry Research Council and State Wheat Industry Research Committees, and financed by the Wheat Research Trust account, provide for continuation or expansion of existing projects, the financing of new investigations, and capital expenditure for research facilities and equipment.

The following summary indicates the type of work in progress by state departments of agriculture and research organizations and supported by the Wheat Industry Research Council and/or State Wheat Industry Research Committees:

CSIRO—Wheat quality studies, breeding and improvement of pasture grasses and legumes for the wheat area of eastern Australia, soil fertility, soil tillage, control of insect activity in wheat storage, Skeleton Weed, machinery.

Waite Agricultural Research Institute (Adelaide, S.A.)—Wheat studies, wheat genetics and wheat breeding, wheat disease, soil fertility.

Bread Research Institute of Australia, (Sydney, N.S.W.)—Wheat quality studies.

South Australian Department of Chemistry—Wheat quality testing, wheat breeding.

Applied research on wheat diseases, soil fertility, soil nitrogen, plant breeding, wheat quality, and weed control are underway in every state. In addition, research efforts continue on improved pasture legumes and pasture systems. The Wheat Research Fund also provides for scholarships at Australian universities.

Improved varieties

Research for quality improvement is designed principally to develop better varieties for bread production and thereby better satisfy marketing demands at home and abroad. This is a monumental task.

Problems in breeding for good baking strength are complicated, for when wheat is grown under conditions favoring high protein content, it usually produces yields noticeably lower than the softer-textured varieties. These variations often result from expansions into new wheat-growing areas, incidence of new plant diseases, and erratic environmental conditions all of them variously affected by a large variety of management systems practiced on widely ranging soil types both within fields and between them.

The Bread Research Institute at Sydney and the Waite Institute at Adelaide are investigating factors influencing bread quality in Australian wheats.

Good progress has been made, as is evidenced by the increased production of stronger-type wheats in major areas of the nation. This progress involves not only protein content but protein or gluten quality as well. Consistent improvement in both can be noted.

Wheat breeding efforts pertaining to quality are almost exclusively devoted to improving bread-baking quality by raising protein levels by 1-1½ percent.

The present minimum standard baking performance for wheat is represented by the variety *Gabo*, a semi-hard White Spring wheat which produces a farinograph

---

[6] The tax is one farthing per bushel; a farthing is ¼ pence or 0.23 cents.

Table 12.—AUSTRALIA: Funds for wheat research, 1958–59 to 1963–64

Season	Growers' contribution	Commonwealth Government allocation	Total
	U.S. dol.	*U.S. dol.*	*U.S. dol.*
1958–59	464,177	443,995	908,172
1959–60	417,825	392,000	809,825
1960–61	585,807	376,320	962,127
1961–62	522,769	548,800	1,071,569
1962–63	664,975	488,320	1,153,295
1963–64	[1] 612,000	616,000	1,228,000
Total	3,267,553	2,865,435	6,132,988

[1] Estimate by FAS based on ¼¢ per bushel on 308 million bushels delivered to the Australian Wheat Board.

curve comparable with the U.S. medium-strong Hard Red Winter and Hard Red Spring wheats. For example, in 8 trials averaging 11.5 percent protein, the farinograph-strength figure for Gabo was 11.3 minutes, the water absorption was 68.1 percent and the Pelshenke Time was 84 minutes. However, it can be made into acceptable bread with flour protein 10 percent or slightly under. At these same low-protein contents, on the other hand, most hard textured wheats generally make unsatisfactory bread.

In addition to good baking strength, the breeders are concentrating on uniformity of kernel texture as found in Gabo, and wheats of similar quality at 10 percent protein appeared to the observers surprisingly hard and uniformly textured. These varieties are widely grown, at present representing the bulk of Australian production at both high and low protein contents.

As new varieties are developed which approach the quality desired, plant diseases are encountered, particularly new races of stem rust, which partially or completely nullify the advantages, by reducing yields and making the new variety economically unsound. Root rots, leaf rust, and Septoria also are factors in lowering grain yields and quality. In 1963, unusually wet weather conditions favored diseases, and both yields and protein content dropped in some areas.

In addition to the disease problem, the improvement program for bread wheats must contend with the universal tendency for high-protein wheats to yield notably less than soft wheats.

Good-to-fair gluten quality wheats can be produced in parts of all states, but the bulk of the grain now being produced still is too low in protein to be attractive in markets requiring strong wheats. The greatest volume is in the 9- to 11-percent protein wheats.

Breeding for soft wheats has been relegated to a very minor place. No special pastry-quality tests are being conducted. Pastry evaluations being used are based upon kernel texture, and the usual bread-quality tests. The variety "Insignia" is the most popular soft-wheat type grown in Australia, and is used as the standard of comparison for soft wheats in quality evaluations. Increased attention is being given to "Pinnacle," also.

A new problem in breeding for bread quality is manifested by poor machinability of the dough produced by some new varieties. Some varieties produce a better loaf when it is hand-molded than when it is machine-molded. Research is being conducted to determine causes and corrective measures.

Australia grows 3 classes of spring wheats. The most important class is the early-maturing true spring wheat. Medium-early varieties rank second in importance. Late varieties, some of which can be classed as winter-spring in terms of growth habit, have a relatively limited usefulness, being used primarily in early fall seedings to provide pasture, and/or to avoid spring frost damage in areas where early maturing varieties often become severely frosted if sown too early.

Breeding for disease resistance is principally devoted to problems of stem rust, leaf rust, and flag smut. Flag smut appears to be well controlled through use of resistant varieties, but stem rust continues to be only temporarily controlled by new resistant varieties. A greatly accelerated breeding program will be required to cope more adequately with the ever-appearing new races of

Table 13.—Protein[1] Content of Australian Wheat Samples, 1959–64

Sample	1958–59		1959–60		1960–61		1961–62		1962–63		1963–64	
	Protein	Moisture	Protein	Moisture	Protein	Moisture	Protein	Moisture	Protein	Moisture	Protein	Moisture
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
N.S.W. Northern f.a.q.	10.70	11.95	11.8	12.6	12.1	11.8	12.4	12.4	11.2	12.2	11.5	11.7
N.S.W. South/west	9.93	11.6	11.0	12.3	10.3	11.4	11.3	12.2	10.5	12.0	10.4	11.6
Vic. f.a.q.	9.2	10.4	11.8	10.9	9.8	10.3	11.1	10.8	10.2	11.1	10.4	10.3
S.A. f.a.q.	—	—	—	—	10.4	9.5	11.7	10.4	10.7	11.0	10.1	10.7
S.A. semi-hard	9.5	10.3	12.2	10.6	11.2	9.5	12.8	10.4	11.8	10.8	11.0	10.5
S.A. soft	9.6	10.5	12.2	10.7	10.2	9.8	—	—	—	—	—	—
W.A. f.a.q.	8.76	10.2	10.0	9.8	9.8	9.5	9.7	9.8	9.4	9.6	8.3	10.1

[1] Basis, 13.5 percent moisture.

rust and smut. Other important diseases are the root rots, and attempts are being made to find sources of effective resistance to these diseases as well. Increased tolerance to spring frost is receiving considerable attention also in the wheat breeding and testing program.

Weeds and insects

Annual weeds are controlled by cultivation methods and with the use of herbicides such as 2, 4-D. The main noxious weed that is troublesome is Skeleton weed, which, however, has appeared only recently, concerted effort is now being made to pervent spread to other areas.

Insects which attack growing wheat are web worm, army worm, cut worm, locusts, and scarab. These are troublesome in localized areas and most are controllable by the use of Lindane and other preparations. Research programs for better insect control have shown considerable progress with regard to some insects.

THE PRODUCTION OUTLOOK

With Australian acreage, yields, and production all on the increase, the observer is apt to ask; Will these rising trends continue, and if so, at what rate? Or, have they reached a plateau? There are no simple answers.

Researchers and farmers direct their efforts toward expansion, on the one hand, while soil, water, and climate impose limitations, on the other. Australia as a nation devotes considerable attention to development, industrially and agriculturally; this includes development of land. Toward this end, researchers provide adapted crop varieties and farmers grow both pasture and grain crops in areas heretofore ignored.

On the older established farm lands, new varieties and mechanization has enabled the grower to intensify his rotations and secure higher yields. New varieties are being developed which require shorter growing periods; this helps minimize risks of crop failures in areas where rainfall is less reliable than desired. However, much of the Australian wheat belt is subject to drought hazards.

All of these influences are operating in an economic atmosphere that has been conducive—and continues to be conducive—toward utilizing all resources for expanded production in terms of greater yields per acre as well as development of new lands. Maximum application of research is likely to follow on the prospect of increased farm income. With recent and current large wheat crops completely sold at favorable prices before the marketing year has passed, it is assumed that growers will produce as much as possible.

While this report has referred to sheep, it has said little about the importance of wool, Australia's largest export product. The price of wool is considered an economic barometer in Australia, where it has been said that the price of wool as an alternative product has a greater effect on amounts of wheat produced than the price of wheat itself. Traditionally, when prices of wool have been attractive, farmers have raised more sheep and less wheat; however, improvements in pasture productivity indicate that they may now be able to raise more of both at the same time.

More specifically, it appears that wheat acreage in Victoria is at its maximum at around 3 million acres. Some increase in yield can be expected, however, Any increase in planting will come largely as a result of intensified rotations and improved varieties.

As for New South Wales, increased plantings in the past five years have been the result of intensifying rotations and a movement to the West, into areas considered somewhat marginal. Total production could increase as a result of more intensified rotations, of more wheat's being grown in the Western fringes of the Wheat Belt, and of use of improved varieties.

Queensland's potential wheat production is difficult to predict. Development of the Brigalow country certainly will increase total agricultural production; in this, some increase in wheat acreage is inherent. The land and climate are not ideally suited for wheat, but this is a challenge.to researchers. To the extent that the Brigalow country can be developed, some increase in wheat acreage is possible.

In South Australia, acreage increases have come as a result of a westward movement which is reaching out into areas of higher risk. While there are limits to expansion, again, plant breeders are at work to develop both pasture varieties and wheat varieties that will permit intensification of rotations in traditional wheat growing areas and minimizing risks in lighter rainfall areas of the State.

Western Australia is also a bit of a puzzle to predict. Most of the increased acreage has been a result of moving out into the areas where rainfall is critical. Wheat has been successfully grown in this area in recent years. There are thousands of acres of adjacent scrub land in this State that could be brought into production.

These observers are convinced that current conditions are conducive to increased production. Such increases can come as a result of intensified rotations as well as production in areas considered risky. The economic incentives are present, the plant breeders are at work, and the farmers are well-informed.

UNITED STATES DEPARTMENT OF AGRICULTURE

WASHINGTON 25, D. C.

Official Business

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF AGRICULTURE

NOTICE

If you no longer need this publication, check here ☐ return this sheet, and your name will be dropped from the mailing list.

If your address should be changed, print or type the new address on this sheet and return the whole sheet to:

Foreign Agricultural Service, Rm. 5918
U. S. Department of Agriculture
Washington 25, D. C.

USDA. Library
Beltsville Branch
10-9-59 Plant Industry Sta.
FAC-L Beltsville. Md.